

# THE INTERNATIONAL BACCALAUREATE DIPLOMA PROGRAMME: ALIGNMENT WITH THE AUSTRALIAN CURRICULUM & AUSTRALIAN QUALIFICATIONS FRAMEWORK



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FINAL REPORT

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## ACRONYMS

TABLE 1: ACRONYMS USED THROUGHOUT REPORT

| Acronyms       |   |
|----------------|---|
| <b>IB DP</b>   | International Baccalaureate Diploma Programme   |
| <b>AC</b>      | <p>Australian Curriculum</p> <p>The 'Australian Curriculum' is a document developed by the Australian Curriculum Assessment and Reporting Authority, which identifies what young Australians are expected to learn through schooling<sup>1</sup>.</p>                                 |
| <b>ACARA</b>   | <p>Australian Curriculum, Assessment and Reporting Authority</p> <p>An independent authority providing a national approach to education through the national curriculum, national assessment program and national data collection and reporting program<sup>2</sup></p>               |
| <b>AQF</b>     | <p>Australian Qualifications Framework</p> <p>The national policy for regulating qualifications in Australian education and training<sup>3</sup>.</p>   |
| <b>MCEETYA</b> | <p>Ministerial Council for Education, Employment, Training and Youth Affairs</p> <p>MCEETYA released the Melbourne Declaration on Educational Goals for young Australians in 2008; this declaration identifies the direction of Australian schooling for the following ten years.</p> |
| <b>TOK</b>     | Theory of Knowledge   |
| <b>EE</b>      | Extended Essay  |
| <b>CAS</b>     | Creativity, Action, Service   |
| <b>HL</b>      | Higher Level  |

<sup>1</sup> See <http://www.australiancurriculum.edu.au/>

<sup>2</sup> See <http://www.acara.edu.au/default.asp>

<sup>3</sup> See <http://www.aqf.edu.au/>

|           |                |
|-----------|----------------|
| <b>SL</b> | Standard Level |
| <b>HG</b> | History Guide  |

## EXECUTIVE SUMMARY

With the substantial growth of International Baccalaureate (IB) schools across the world, the IB has recognised that support and future development of the organisation's programmes will require information relating to the impact and value of an IB education. As part of this agenda, the IB sought to understand the extent to which, and the ways in which, the IB Diploma Programme (DP) aligns with the standards, principles and practices set out within the Australian Curriculum (AC) developed by the Australian Curriculum, Assessment and Reporting Authority (ACARA), and also the requirements of the Australian Qualifications Framework (AQF) for senior secondary level.

This research project, by Deakin University, evaluated the extent of alignment between the DP and the AC across a number of discipline areas. This was accomplished by a robust mapping of relevant curriculum documents related to the overarching aims of both the IB DP and the AC, as well as the four discipline areas of Mathematics, Science, English and History. This mapping was supported by snapshots of the lived experience of the DP curriculum through qualitative data from educators in DP schools in Australia. Qualitative data included telephone interviews with DP coordinators in 29 Australian schools, online surveys returned by discipline coordinators (Mathematics, Science, English and History) in 16 DP schools, and case study visits to two DP schools by the researchers.

### Key Results emerging from the analysis indicate:

- The national focus of the 'Melbourne Declaration on Educational Goals for Young Australians' was found to contrast with the global focus in the IB DP. This means that the IB DP focus on 'world' surpasses the AC focus on 'society', at the same time there are areas where there is a *possibility* for the IB DP to fall short of alignment with the AC. These shortfalls are in regard to the AC focus on Australian Indigenous History and communities, and attention to the Australian Governmental structures. While these shortfalls were identified in document analysis, they did not extend to the enacted curriculum in Australian schools. There, the DP curriculum was found to be more strongly aligned in these areas.
- The core DP units 'Theory of Knowledge' (TOK), 'Creativity, Action, Service' (CAS) and 'Extended Essay' (EE) were found to be key features of the DP which assist with alignment with the Melbourne Declaration and also the three dimensions outlined in the Shape of the Australian Curriculum: discipline-based learning, general capabilities and cross-curriculum priorities. In some ways the DP was found to surpass these dimensions of the AC. This was further supported through the qualitative data collected through interviews with DP teachers.
- DP students are required to undertake a Mathematics subject, which is not the case for a senior student in the AC. A student undertaking the AC Mathematics offerings of mathematical methods and specialist Mathematics will undertake significantly less depth of Mathematics than what is offered in the DP subjects. A common view put forward by DP Mathematics teachers in interviews was that the greater emphasis on external assessment in the DP leads to better preparation for tertiary studies, and that the Higher Level subjects exceed the standard of achievement required in the various state curriculum certificates.

- DP students are required to undertake a Science subject, which is not the case for a senior student in the AC. The DP chemistry course surpasses the AC equivalent in terms of real world applications, a view that was supported by DP chemistry teachers. 'Environmental systems and societies' in the DP, however, is only offered at SL and does not cover all content available in the AC equivalent subjects. DP Science has a greater emphasis on external assessment, yet DP Science coordinators expressed a view, in interviews, that the requirements of the internal assessment were driving high-level experimental skills.
- In the Group 1 English subjects in the DP the global dimension and commitment to internationalisation, intercultural understanding and inclusion is evident. For example, in parts 3 and 4 of the Language and Literature A syllabus, the study of works in translation and the investigation of context highlight the ways in which meaning can change across cultural boundaries. This aligns well with the emphasis in the AC on 'critical literacy' and the role of the contexts of a text in determining and shifting its meaning. No alignment was found in the AC with the DP Literature and Performance syllabus and this may be one area where the DP surpasses what is offered in the AC in relation to senior English.
- The DP History and the AC senior History courses are comparable when it comes to learning outcomes around historical skills, but the DP course surpasses the AC with regard to particular academic skill development, such as constructing a written argument under exam conditions. The DP History courses do not include any attention to Ancient Civilisations, but the Route 2 course covers most of the content being offered in the AC modern History course. The DP History courses particularly contribute to DP alignment with the AC general capabilities of 'intercultural understanding' and 'critical and creative thinking' and also with the cross curriculum priority of 'Asia and Australia's engagement with Asia'.
- Information about school context, generated through the qualitative data collection, is vital in terms of gaining deeper insights into the ways in which the DP is consistent with the aims and goals of the Australian Curriculum. Qualitative data has provided important insights into how the enactment of the DP in Australian schools is done in ways that engage with the national and regional context. Thus areas that were found to be gaps at the document mapping stage were usually found to be restored at the level of enactment in schools.
- The DP meets the specifications for 'Senior Secondary Certificate of Education' outlined in the Australian Qualifications Framework and it also contributes to the specifications for the Level 7 Bachelor Degree.

## INTRODUCTION

With the substantial growth of International Baccalaureate (IB) schools across the world, the IB has recognised that support and future development of the organisation's programmes will require information relating to the impact and value of an IB education. As part of this agenda, the IB sought to understand the extent to which, and the ways in which, the IB Diploma Programme aligns with the standards, principles and practices set out within the Australian Curriculum (AC) being developed by the Australian Curriculum, Assessment and Reporting Authority (ACARA), and also the requirements of the Australian Qualifications Framework (AQF) for senior secondary level. This is in order to establish the extent to which the IB DP is consistent with the educational goals and requirements established by the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEETYA) and ACARA, including areas where the IB DP fails to meet or surpasses such goals and requirements.

The project 'The International Baccalaureate Diploma Programme: Alignment with the Australian Curriculum & Australian Qualifications Framework', ran between June 2013 and April 2014 and was led by Associate Professor Mary Dixon and Dr. Claire Charles, of Deakin University. The other project team members included Associate Professor Julianne Moss, Associate Professor Peter Hubber, and research assistance support from Dr. Pauline Ho and Penelope Pitt. The study addresses the following questions:

1. To what extent does the IB DP curriculum align with the 'Melbourne Declaration on Educational Goals for Young Australians'?
2. To what degree does the IB DP curriculum align with the principles and guidelines in the 'Shape of the Australian Curriculum v4 2012'?
3. In what ways do the IB DP content standards align with the content standards described in Australian Curriculum documents?

Consideration is also given to the following questions:

4. Are the standards, principles and practices of the IB DP consistent with AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'?
5. Do the standards, principles and practices of the IB DP provide knowledge and skills that contribute to success at higher AQF levels, specifically the Level 7 Bachelor Degree?

The stated aim of the study is principally one of curriculum mapping and comparative explanation of the conceptions of curriculum between the Australian Curriculum and the IB DP curriculum. This is accomplished by a robust mapping of relevant curriculum documents related to the educational goals of both the IB DP and the AC, as well as the four discipline areas of Mathematics, Science, English and History. This mapping is supported by snapshots of the lived experience of IB DP curriculum through qualitative data from educators in IB DP schools. Qualitative data includes telephone interviews with IB DP coordinators in 29 Australian schools, online surveys consisting of open-ended questions returned by discipline coordinators (Mathematics, Science, English and History) in 16 IB DP schools, and case study visits to two IB DP schools by the researchers.

An important issue to note at the outset of this report is that the Australian Curriculum (AC) is yet to be implemented into the Australian state jurisdictions and thus the comments about alignment made by IB DP



teachers relate mostly to whatever state school leaving certificate was in operation at the time of the research. However, the research team was still able to take many of the comments made by teachers about the IB DP and use this to further illuminate possible levels of alignment to the proposed Australian Curriculum across a number of key aims and specific subject areas.

After detailing the research design, this report presents findings to research questions One, Two and Three in order. Research question Three comprises the largest section of the report, in which findings relating to alignment from each curriculum area of Mathematics, Science, English and History are presented. For the purposes of coherency, findings related to alignment with the AQF (research questions Four and Five) are integrated with the findings for questions One to Three. This is done because the commentary made by researchers about how the IB DP contributes to the AQF specifications is best understood if flowing directly from the information about the content of the different curriculum areas.

The two school case studies are presented in the final section of the report. During late 2013 and early 2014 two members of the research team visited two IB DP schools in different Australian states, in order to collect information about how alignment between the IB DP and the AC are enacted in particular school contexts. These case studies build on the interviews with the IB DP coordinators and surveys of curriculum leaders, and offer depth to the research that the document analysis may not have been able to reveal independently.

## RESEARCH DESIGN

The stated aim of this study is principally one of curriculum mapping and comparative explanation of the conceptions of curriculum between the AC and the IB DP curriculum with a view to reviewing the implications for quality assurance against the AQF. As a curriculum evaluation this project involves the adoption of a methodology that captures the technical and lived experiences of curriculum, within the limits of a small-scale project. The project is therefore predominantly a robust mapping supported by snapshots of the lived experience of curriculum through qualitative data from educators working in the IB DP, and chosen purposefully to provide a richer picture of the qualitative dimensions of the broad goals of the IB DP.

The design follows, in stage 1, the work of Porter (2002)<sup>4</sup>. In his work on curriculum mapping, Porter argued for the establishment in the first instance of a 'uniform language' for describing curriculum content. This can then be used to analyse and compare curriculum documents and practice. The design we developed for this project involves a staged data collection and analysis process. In the initial stage expert panels were drawn on to establish a uniform language used in the formation of matrices of alignment. In the second stage, curriculum documents were then analysed using the uniform language of standards, principles, practices and learning outcomes. Practices in participating IB DP schools were mapped through telephone and online surveys with IB DP curriculum coordinators and leaders in schools. These practices were integrated into the curriculum matrices. In the final stage the lived experience of curriculum was addressed through two case studies. In the sections that follow the refinements and adjustments we have made to the process are explained.

### Stage 1 Expert uniform language

The first stage of the research involved forming panels of relevant curriculum experts to develop a uniform language that addresses all curriculum areas to be mapped (Overarching Curriculum statements for research questions 1, 2, 4 and 5 and Mathematics, Science, English and History for questions 3, 4 and 5). The curriculum team for the overarching curriculum statements was led by Assoc. Prof Mary Dixon and included Assoc. Prof. Julianne Moss and Dr. Pauline Ho with advice from Assoc. Prof Nigel Bagnall. The curriculum teams of experts for Mathematics and Science was led by Assoc. Prof Peter Hubber and included Melanie Isaacs, a former member of the senior curriculum program in ACARA, and three postgraduate Mathematics and Science curriculum students at Deakin University. The English expert curriculum panel comprised Assoc. Prof Julianne Moss and Dr. Joanne O'Mara, an English curriculum specialist at Deakin University. For History curriculum, the expert panel was led by Dr. Claire Charles, with support from Dr. Pauline Ho and two experts in History curriculum from Deakin University – Kate Harvie and Kerry Garrard.

Initially, we planned for the experts to meet in groups of three, relevant to their expertise, over a two-day period. However after the initial in-depth exploration of the relevant documents by the project researchers (who are themselves curriculum experts) it was determined that the large number of relevant documents

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<sup>4</sup> Porter, A.C. (2002). Measuring the content of instruction: Uses in research and Practice, *Educational Researcher*, 31 (7), 3-1

would hinder the effectiveness of a two-day meeting working from the array of documents to uniform language. Consequently, the researchers as a group, and with the advice of critical friends, drew up an interim uniform language list for each panel. This was then given to the panel to support their initial reading before feedback was given. Each panel had been briefed through an initial training session led by project members. The panels have developed uniform language that is specific and exhaustive.

## Stage 2 Matrix and survey

During the establishment of uniform language the issue of alignment was an inevitable and critical component. Questions of discrepancy of language indeed demand consideration of alignment. This process, which involved consultation with experts and with critical friends, provided a preliminary reading of degrees of alignment. With the assistance of a research fellow a matrix for each curriculum area (Mathematics, Science, English and History), and which includes overarching curriculum statements, was constructed as a major tool and platform for analysis. Originally it was intended that an online survey would be used to refine the matrix in terms of degrees of alignment and practices. As stated in an interim report provided to IB in October 2013, the research team reviewed this process and the survey process was redeveloped to involve two steps. Step One included a phone interview with IB DP coordinators. Step Two involved a survey sent to DP coordinators in DP schools, in order to receive more specific feedback about how the DP is enacted, and levels of alignment, in each discipline area.

An ethics committee approved the participation by DP schools in the research, which was made up of several phases; telephone interviews, surveys of curriculum leaders and two case studies, details of which follow.

## Telephone interviews with IB DP coordinators

A total of 63 IB DP schools across Australia were identified and representatives were invited to participate in the telephone interviews. Table 2 below shows the breakdown of each of the IB DP schools contacted for the interview participation across states and territories in Australia.

TABLE 2: IB DP SCHOOLS IN AUSTRALIA BY STATE/TERRITORY

| State/Territory              | No. of IB DP schools contacted for IB DP Coordinator interview participation |
|------------------------------|--|
| Australian Capital Territory | 5  |
| New South Wales              | 15   |
| Northern Territory           | 1  |
| South Australia              | 9  |

|                   |    |
|-------------------|----|
| Tasmania          | 1  |
| Queensland        | 11 |
| Victoria          | 16 |
| Western Australia | 5  |
| Total             | 63 |

In early September 2013, the research team contacted the DP coordinators to invite them to participate in interviews. 31 of the DP coordinators expressed an initial indication of their interest to participate in the interview. A follow-up email invitation for the interview participation was then sent to all DP schools to request a suitable date and time for the interview in October.

28 schools did not respond to the invitation email and follow up phone calls. A further four schools declined to participate stating reasons including being too busy, not interested, and that their school was discontinuing the DP Programme. Two of the 31 schools who initially expressed interest in participating later did not respond to emails and phone calls about arranging an interview time.

29 telephone interviews with DP coordinators (and/or senior school representatives) were carried out in October and November 2013. The majority of these interviews were with DP coordinators and in three cases the interviews were carried out with the deputy principal or with a teacher in a coordinating position. The telephone interviews were on average one hour in length. All but one of the telephone interviews were audio-recorded and later transcribed (one interviewee preferred that their interview not be audio-recorded).

Appendix 1 shows the list of schools who participated in the coordinator interviews and Table 3 below provides a summary of the number of DP schools participating in the telephone interviews according to state and territory in Australia. Most states and territories are represented in the DP coordinator interview sample. Of the 29 participating schools, 22 schools offer both the DP and the Australian Curriculum, and seven schools offer only the DP at senior school level. The participating schools include government and independent schools, selective schools, international schools, Steiner and Montessori schools, co-educational and single-sex schools.

TABLE 3: SCHOOLS PARTICIPATING IN IB DP COORDINATOR INTERVIEWS BY STATE/TERRITORY

| State/territory              | No. of IB DP schools | No. of IB DP schools participating in IB DP coordinator interviews |
|------------------------------|----------------------|--|
| Australian Capital Territory | 5                    | 4  |
| New South Wales              | 15                   | 8  |
| Northern Territory           | 1                    | 0  |
| South Australia              | 9                    | 4  |
| Tasmania                     | 1                    | 0  |
| Queensland                   | 11                   | 5  |
| Victoria                     | 16                   | 6  |
| Western Australia            | 5                    | 2  |
| Total                        | 63                   | 29   |

The coordinator interview schedules are included in Appendix 2, with interview questions developed to respond to the study's overarching research questions. The map of correspondences between the research questions and the interview schedule is included in Appendix 3. The interview schedule was designed to elicit individual school alignment of the DP and the Australian Curriculum documents. The interview questions enabled examples of practices to be elicited which in turn led to nuanced readings of the documents and deep knowledge of curriculum implementation and IB philosophy.

### Surveys of curriculum leaders

This stage offers the important addition of alignment to *practice*. This is Step Two of the survey process. Curriculum leaders in the areas of Mathematics, Science, English and History at the 29 participating schools were invited to complete qualitative surveys which were designed to capture how they are enacting the IB DP curriculum in practice.

All 29 participating schools were invited to complete the curriculum leader surveys. The invitation and survey distribution varied according to the wishes of the IB DP coordinator. In some cases, the IB DP coordinator canvassed curriculum leaders' interest in taking part in the survey and then provided the researchers with

email contact details for those leaders who were interested in participating. In other cases, the IB DP coordinator distributed the surveys to relevant and interested coordinators themselves.

Not all participating schools had a curriculum leader for each of the four subject areas of Mathematics, Science, English and History. This was particularly the case in smaller schools. The IB DP coordinators forwarded the invitation to complete the survey to senior teachers in the discipline areas wherever possible. 32 curriculum leaders from 16 different schools completed the curriculum leader surveys. These schools represented six Australian states and territories. Appendix 4 shows the schools participating in Curriculum Leader surveys, while Appendix 5 shows the four survey schedules.

All schools participating in the interviews were coded according to their sector (government or independent), student number, and whether they offer both IB DP and a state school leaving certificate.

### Stage 3 Case studies

To enrich the online survey data administered to schools nationally, researchers visited two of the IB DP schools who participated in the coordinator interviews. These two schools were selected as case study schools both because of the willingness of the IB DP coordinators to take part in a case study visit and because of the two schools' different characteristics in terms of state, curriculum offered, and independent/government sector. The two case study schools are in two different Australian states. One case study school offers only the IB DP in senior school years whilst the other case study school offers both the local state senior school curriculum and the IB DP in senior school years. One case study school is an independent school and the other is a government school.

The IB DP has a major focus on the IB learner. Through the two case studies, we offer detail as to how the IB DP is lived in specific contexts with specific IB learners. During the case study visits, researchers toured the schools and interviewed various relevant teachers, including the IB DP coordinator and curriculum coordinators in the areas of Mathematics, Science, English and History. Interviews were audio recorded and later transcribed.

### Analysis

A cartographic analysis has been used to reveal curriculum alignments as specified in the project brief. This mapping was based on the development of an agreed uniform language discerned by, in the first instance, the researchers and then refined by expert panels: curriculum panels for all overarching documents (for research questions 1,2,4 and 5) and four discipline panels– Mathematics, Science, English and History (for research questions 3, 4 and 5). This was the first layer of analysis.

The uniform language was then used as the basis for a matrix. One matrix was developed for each area as a single matrix would not be sufficient to carry the weight of the large bank of documents. The two sets of curriculum documents (IB DP and AC) were then positioned against the uniform language and degrees of alignment were discerned.

The next stage of analysis mapped data from the surveys and interviews against key findings from the respective matrix.

## RESEARCH QUESTION 1

This chapter is the first of the analysis chapters. It addresses the following research question:

**Research Question 1:** To what extent does the IB DP curriculum align with the ‘Melbourne Declaration on Educational Goals for Young Australians’?

The overarching documents consulted in the mapping of the IB DP and the AC (see Table 4) were considered as they inform responses to the first two research questions. The list of documents consulted in the mapping process can be found in Appendix 6. Each curriculum setting, the Australian Curriculum (AC) and the IB DP, have produced a set of documents that elaborate on the underpinning educational philosophy, beliefs, and intentions of the respective setting. These documents, both in relation to the IB DP and to the AC, draw on the discourses of educational philosophy, social theory, pedagogy and curriculum theory. Each set of documents has its own terms that are internally consistent but do not directly align externally. For example, the AC documents refer to ‘goals of education’ whereas the IB DP documents refer to ‘Mission’. The project team refers to these as ‘Overarching Documents’ in order to indicate their distinction from the specific discipline documents (Maths, Science, English, History) and to establish an identifier which does not use any of the terms specific to either curriculum.

TABLE 4: OVERARCHING DOCUMENTS

|                       | AC  | IB  |
|-----------------------|---|---|
| Overarching documents | <p>Shape of the Australian Curriculum (2012)</p> <p>The Melbourne Declaration on Educational Goals for Young Australians (2008)</p> | <p>Mission and Strategy (<a href="http://www.ibo.org/mission/">www.ibo.org/mission/</a>)</p> <p>What is an IB education? (2013)</p> <p>IB Diploma Programme – Overview (<a href="http://www.ibo.org/diploma/">www.ibo.org/diploma/</a>)</p> <p>The Diploma Programme. From Principles into Practice (IB DP, 2009)</p> |

### Analysis of curriculum

Stage 1. The expert panel for these documents was chaired by Assoc. Professor Mary Dixon (a curriculum theorist and researcher). The development of the uniform language for this set of documents has involved the following steps: initial review by full research team, including the project Research Fellow Dr. Pauline Ho, to establish coherence across all expert panels; informed by advice from Assoc. Prof Nigel Bagnall; advice from Prof. Jill Blackmore (critical friend) and then a panel led by Assoc. Prof Mary Dixon. The documents were compared for their degrees of alignment.

Stage 2. IB curriculum leaders were interviewed for their interpretations of the documents considered here. They were also asked to draw on their school enactments of these to provide a further lived reading of the documents.

Stage 3. The analyses of both documents and interviews were integrated to provide a response to the questions, which speaks to both the intended curriculum (as in the documents) and the enacted curriculum. All discourse analysis of this type is interpretive. The layers of interpretation here have been consciously addressed and acknowledged for their contribution to understanding of judgements of alignment.

This chapter is structured through a response to research question 1 followed by an alignment critique of significant issues that permeate these documents.

### **To what extent does the IB DP curriculum align with the ‘Melbourne Declaration on Educational Goals for Young Australians’?**

Australian Education Ministers from across all states co-authored ‘The ‘Melbourne Declaration on Educational Goals for Young Australians’ in 2008. This document addresses the focus of Australian schooling through articulation of the goals for all Australian schools.

These goals are:

**Goal 1:** Australian schooling promotes equity and excellence

**Goal 2:** All young Australians become:

- successful learners
- confident and creative individuals
- active and informed citizens

It asserts these goals through a statement of positioning education in Australia:

As a nation Australia values the central role of education in building a democratic, equitable and just society – a society that is prosperous, cohesive and culturally diverse, and that values Australia’s Indigenous cultures as a key part of the nation’s History, present and future. (MCEETYA, 2008, p.4)

It also acknowledges the impact of significant global trends:

Global integration and international mobility; the need for Australians to be Asia Literate; the need for a work force with higher further vocational training and the need for Australians to have skills in problem solving, communication technologies, literacy and numeracy. (MCEETYA, 2008, p.4)

The most prominent and distinguishing area for alignment consideration is the location of focus of interest of the overarching documents. The IB is world-focused whilst the Melbourne Declaration is clearly Australian focused. The IB has ‘a mission to create a better world through education’ (IB mission statement). This distinction in focus is understandable as the nation’s government representatives developed the Melbourne Declaration for a program of national education. The IB is designed for a curriculum to be engaged across the world. This distinction reverberates throughout the curriculum documents and enactments. Overall the IB exceeds the AC largely because of this distinction. There are areas, however, where there is a *possibility* for the IB to fall short of alignment with the AC because of this distinction. These shortfalls are in regard to the AC focus on Australian Indigenous History and communities, and attention to the Australian Governmental structures. It is to be noted that the IB DP curriculum documents do provide opportunity for this work but they do not specify the Australian perspective. The IB DP mission document preempts the recognition of this distinction:



[Their intercultural view] not as an alternative to a sense of cultural and national identity, but as an essential part of life in the 21st century. (IB Mission and Strategy Statement, p.1)

These shortfalls are identified in the document analysis. However, they do not extend to the enacted curriculum in Australian schools, which is discussed later in the report.

## GOAL 1: Equity and excellence

Each set of documents, IB DP and AC, have EQUITY and EXCELLENCE as significant premises for the curriculum documents that follow. For the AC it is found in Goal 1 of the Melbourne Declaration.

Goal 1: Australian schooling promotes **equity** and **excellence**

The Declaration details this asserting that **all** Australians should live ‘fulfilling productive and responsible lives’. It articulates the basic premises of a pedagogical environment which can:

- create a socially cohesive society,
- that is free from discrimination and
- that builds on local knowledge and experience of Indigenous students and is in partnership with local communities

The pedagogical approach provides excellence:

through personalised learning that addresses the diverse needs of each young Australian.

### Equity and access:

The IB DP, like the AC, is concerned with equity and access: ‘We aim to break down barriers and create an environment such that more students are able to access and benefit from an IB education regardless of personal circumstances’ (IB mission statement, Goal 3). This emphasis on access has strong alignment in these large statements. The AC however goes on to detail how this access must directly include those who are disadvantaged by socio-economic status and by indigeneity. The issue of access is particularly addressed in the document *The Diploma Programme: From Principles into Practice* (IB, 2009). In particular focus is on access for students from a range of economic backgrounds and from backgrounds with various languages and for students with special needs (IB, 2009, p.8).

The IB documents do not preclude particular learners. The challenge for providing access to IB education may be read in the use of the words ‘We aim to break down barriers’. Several of the 29 IB DP coordinators and school leaders interviewed for the study commented on the aspect of access:

it’s pretty clear that the diploma does that...our program is accessible for all students but having said that we are a fairly...we’re a school in a fairly high socioeconomic group, in terms of actually providing programs for indigenous Australians et cetera, just our demographic doesn’t actually open up that possibility anyway. [...] it’s very difficult to sort of meet that. (11, NG, IB/AC, N, \*\*\*)

For other schools:

[...] I'm really proud of the opportunity that we offer to kids who can't afford access to the private school system. (7, G, IB/AC, S, \*\*)

One of the things that's probably the most remarkable is what the program does for our average student or just above average student, they themselves are surprised by what they can achieve if they apply themselves to the program and so over and over we've had students performing in a way as a result of a very scaffolded framework if you like, where they know what's required from an early stage and the bar is set very high and they jump over it, and they surprise themselves because they can, because they've worked from the beginning of year 11 for a 2 year period and they've achieved this amazing amount. (13, NG, IB/AC, N, \*)

Some also described how the IB DP does include attention to indigenous communities and intercultural respect:

The philosophy of the IB DP is about challenge and breadth, and that intercultural awareness which I think is really, really important and certainly comes through the Melbourne Declaration educational goals, saying we need to have these students with an awareness of the world and the differences that exist in the world. (10, NG, IB/AC, S, \*\*)

**Personalised learning plans:** The IB DP does directly address access and diversity in its curriculum through the units 'Extended Essay' and 'Creativity, Action, Service' (CAS).

**Excellence:** There is strong alignment here. Whereas the AC identifies excellence the IB DP identifies 'high standards' (IB mission statement) and emphasises 'challenging programs of international education and rigorous assessment' (IB mission statement). As one DP coordinator commented

...it is about internationalism. It's about excellence. (7, G, IB/AC, S, \*\*)

The full implications of these areas are spelt out in more detail in the following section and then the chapters that follow. There the degrees of alignment are more finely drawn.

**Socially cohesive society free from discrimination:** There is strong alignment between the documents in this regard. Whereas the AC strives for a **socially cohesive society free** from discrimination, the IB DP aims to create a better and more peaceful world through intercultural understanding and respect (IB mission statement). It could be argued that the IB focus on 'world' surpasses the AC focus on 'society'. However the scope of intercultural understanding is well defined in the AC. The scope of intercultural understanding in the AC is reported as:

Intercultural understanding combines personal, interpersonal and social knowledge and skills. It involves students in learning to value and view critically their own cultural perspectives and practices and those of others through their interactions with people, texts and contexts across the curriculum.

Intercultural understanding encourages students to make connections between their own worlds and the worlds of others, to build on shared interests and commonalities, and to negotiate or mediate difference. It develops students' abilities to communicate and empathise with others and to analyse intercultural experiences critically. It offers opportunities for them to consider their own beliefs and attitudes in a new light, and so gain insight into themselves and others. (see

<http://www.australiancurriculum.edu.au/GeneralCapabilities/intercultural-understanding/introduction/intercultural-understanding-across-the-curriculum>)

## GOAL 2: Learners

Both documents articulate their view of the learner.

In the Melbourne Declaration Goal 2: All young Australians become:

- successful learners,
- confident and creative individuals and
- active and informed citizens

The IB documents use an elaboration of the learner to carry the weight of their curriculum philosophy and pedagogical positioning.

In brief, IB learners are identified as:

- inquirers
- knowledgeable
- thinkers
- communicators
- principled
- open-minded
- caring
- risk-takers
- balanced and
- reflective

These learner descriptors address positions on learning dispositions and skills, areas of knowledge held by the learner, and personal characteristics. Each of the documents elaborates each descriptor more fully.

## Learning dispositions and skills

The following learner descriptors in regard to learning dispositions and skill evidence **strong alignment** (see Table 5).

TABLE 5: LEARNING DISPOSITIONS EVIDENCING STRONG ALIGNMENT

| AC                | IB DP               |
|-------------------|---------------------|
| Evaluate evidence | Critical reflection |

|   |  |
|---|--|
| Plan independently collaboratively and work in teams to communicate ideas | <p>Collaborate effectively and willingly with others</p> <p>They exercise initiative in applying thinking skills</p> <p>A lifetime of learning independently and collaboratively</p> |
| Knowledge skills values for healthy satisfying lives                      | Intellectual physical emotional balance for personal well being and for others   |
| Confidence and capacity for further study                                 | Lifelong learners  |

The following learner descriptors in regard to learning characteristics evidence **weak alignment**, with the IB DP not meeting the descriptors in the AC (see Table 6). It could be argued that the IB DP exceeds the AC in having a generalised or worldview of indigeneity, culture and governance. Conversely, it can be argued that the IB DP does not meet the AC with its focused attention on national framing and local indigenous communities. This latter position is indicated here but in the following chapters the curriculum possibility that the IB DP has for attention to the local and the national in the enacted curriculum is elaborated. The insights of the enacted curriculum in Australian IB DP settings from IB DP school coordinators and teachers evidence that the disjunctions apparent in the curriculum documents are addressed, and the enacted curriculum *is* aligned with the AC.

TABLE 6: LEARNING DISPOSITIONS EVIDENCING WEAK ALIGNMENT

| AC   | IB DP   |
|--|---|
| Well prepared for family community and workforce                               | More aligned towards a global community rather than national or family      |
| Have an understanding of Australia's system of government, History and culture | Not specific to Australia's system of government but a global understanding |

|   |  |
|---|--|
| Appreciate Australia's social, cultural diversity including the Indigenous cultures                                       | Is optionally available as an area of knowledge in the core unit Theory of Knowledge                                       |
| Possess the knowledge skills and values to contribute to reconciliation between Indigenous and non-Indigenous Australians | Social justice and global engagement, rather than a specific political ideal   |
| Committed to national values of democracy   | Not specific to Australia's system of government but a global understanding  |
| Committed to national values of justice   | Sense of justice: Social justice and global engagement, rather than a specific political ideal                             |
| Committed to national values of equity  | Sense of fairness: Values of fairness in broader global contexts rather than national                                      |
| Participate in Australia's civic life   | Knowledgeable - Indicator 'understands local context' (The Diploma Programme. From Principals into Practice (IB, 2008. 32) |
| Communicate across cultures especially Asia   | Global contexts  |

The following learner descriptors in regard to learning characteristics evidence **alignment** with the **IB surpassing** the descriptors in the AC.

TABLE 7: LEARNING DISPOSITIONS WITH IB DP SURPASSING AC

| AC  | IB DP   |
|---|---|
| Creative innovative and resourceful to solve problems   | Creatively recognise and approach complex problems and make reasoned ethical decisions: brave and articulate in defending their beliefs; thinks and are risk takers |
| Their emotional mental spiritual and physical wellbeing | Understand the importance of intellectual, physical and emotional balance to achieve personal wellbeing for themselves and others                                   |

|   |   |
|---|---|
| Make rational decisions   | Make reasoned and ethical decisions   |
| Work for sustaining natural and social environment                        | Personal commitment to the service to others and to the environment                       |
| Appreciate Australia's social cultural linguistic and religious diversity | Understand their own culture and are open to perspectives values and traditions of others |
| Think deeply and logically  | Think critically and creatively   |
|   | Critical reflection   |
|   | Acquire skills to conduct inquiry and research  |
|   | Articulate in defending their beliefs   |

## Learner knowledge

These sets of documents (listed in Table 4) provide only brief comments on bodies of knowledge that are involved in the curriculum. Some broad knowledge constituents, however, are indicated. The AC notes that learners must have essential skills in literacy and numeracy. This is not specifically identified in the IB DP. However, DP students must study six subjects concurrently. These include two languages, one subject from individuals and societies (group 3), one experimental Science (group 4), one Mathematics subject (group 5), and one subject from the arts (group 6) or another subject from groups 1 to 5. The AC also specifies that learners are 'Creative productive users of technology'. In the IB DP, technology use is a specific requirement in group 4 subjects. The assessment and methodologies for teaching include a requirement for technological competence in these areas.

The IB DP does emphasise in-depth knowledge across a broad range of disciplines. The DP Core includes the Extended Essay, Theory of Knowledge and Creativity, Action, Service. The curriculum takes on a deep inquiry approach that ensures breadth and depth of knowledge. Theory of Knowledge 'develops a coherent approach to learning that unifies the academic disciplines...students inquire into the nature of knowing and deepen their understanding of knowledge as a human construction'. It also requires the students have the knowledge to communicate in more than one language.

The IB DP and AC are not fully aligned in regard to knowledge of government, culture and History. In the AC this is focused on Australian government, culture and History. In the IB DP this is referred to as a global

understanding. The IB DP does suggest that the curriculum gives teachers the choice to make this locally relevant and emphasises the importance of the local in intercultural understanding (The Diploma Programme: From Principles into Practice 2009, p.6). In that regard it argues that such understanding ‘stems from an understanding of their [student’s] own culture’ (The Diploma Programme: From Principles into Practice IB, 2009, p.7).

The AC also requires ‘understanding and knowledge of Indigenous cultures’, and ‘the knowledge skills and values to contribute to reconciliation between Indigenous and non-Indigenous Australians’. The IB DP has a more generic statement requiring that learners ‘understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities’ (What is an IB education? 2012, p. 2). These issues reflect similar disparities in skills and dispositions addressed in previous sections. In the core unit Theory of Knowledge it is, however, an optional area of study.

## Personal characteristics

The personal values to which students should aspire are largely commensurate across the two curricula with each identifying honesty, justice, and empathy. However the IB DP curriculum is distinctive in its identification of compassion and global service learning - ‘to make a positive difference to the lives of others and to the environment’ (What is an IB education? 2012, p. 2).

The following learner descriptors listed in Table 8 regarding personal characteristics evidence **strong alignment**.

TABLE 8: PERSONAL CHARACTERISTICS EVIDENCING STRONG ALIGNMENT

| AC   | IB DP  |
|--|--|
| Have a sense of self-worth, self-awareness personal identity to manage | Act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual |
| Sense of optimism for future - enterprising                            | Independence of spirit to explore new roles, ideas and strategies  |
| Honest   | Act with honesty   |
| Work for the common good   | Sense of fairness  |
| Empathy  | Show empathy   |

|   |   |
|---|---|
| Respect for others                              | Respect for dignity of individual group community, needs and feelings |
| Relate well to others for healthy relationships | Achieve wellbeing for themselves and others                           |
| Embrace opportunity                             | Explore new roles, ideas and strategies                               |
| Resilient                                       | Approach unfamiliar situations with courage and forethought           |
| Act with ethical integrity                      | Make reasoned and ethical decisions                                   |
| Are responsible and global citizens             | Globally-engaged  |
| Take responsibility                             | Take responsibility for their own actions                             |

The following learner descriptors in Table 9 in relation to personal characteristics evidence **weak or no alignment**. It could be said the IB DP surpasses the AC in this regard.

TABLE 9: PERSONAL CHARACTERISTICS EVIDENCING WEAK OR NO ALIGNMENT

| AC | IB DP                  |
|----|------------------------|
|    | Independence of spirit |
|    | Brave                  |
|    | Balanced               |
|    | Show compassion        |



## IB DP worldview and AC national focus

Both sets of curriculum documents emphasise the importance of a global and an international view with international mindedness being central to the IB DP discourse. The emphasis in the IB DP documents on social justice and global engagement stand in contrast to the Australian Curriculum emphasis on a specific political ideal with repeated attention to national values.

Issues of indigenous perspectives and civic governance are attuned to the Australian perspective 'appreciate Australia's social, cultural, linguistic and religious diversity and an understanding of Australia's system of government, History and culture' (MCEETYA, 2008, p. 9) including 'Indigenous cultures and...reconciliation between Indigenous and non-Indigenous Australians' (MCEETYA, 2008, p. 9). Whereas the IB DP documents encourage students to 'value the world as the broadest context for learning' (What is an IB education? 2012, p. 6) and to be 'open to the perspectives, values and traditions of other individuals and communities' (What is an IB education? 2012, p. 2). The international mindedness of the IB DP is further distinguished through an emphasis on collaboration with others through communicating effectively in more than one language. As the AC has not yet been implemented it is not possible to consider the significance these attributes will have in the lived curriculum of the AC. However, their specificity in the documents indicates that they will need to be addressed directly in that lived curriculum.

Various schools reported the ways that the issues of governance and indigenous knowledge are included in the Theory Of Knowledge (TOK), Extended Essay (EE) and Creativity, Action, Service (CAS). For example, one DP school explained:

We do also have one CAS program, CAS activity which we started last year where we take out students out to an Aboriginal community in [ ] in outback NSW so there is definitely exposure to indigenous History and culture but it's not...this is something that the school has added and of course it wouldn't be appropriate to an IB school that was located somewhere else in that sense. So it easily does fit in and actually our school does it, but it's not mandatory within the curriculum I suppose...I think that's a very positive step forward that indigenous ways of knowing have made their way in on par with reasoning and perception. (6, NG, IB, N, \*)

Some of the IB DP curriculum leaders acknowledged the challenge of the distinctions of world/national emphasis. As one leader pointed out:

... all the syllabus subject guides are global they don't necessarily say you've got to look at this particular country system of government. You know there are individual subjects that look at government or look at History which you then can choose to look at these other areas but it's quite possible they would go through the whole of the Diploma and not look at Australia's system of government at all. (27, NG, IB, W, \*)

Some schools provide a balance by addressing Australian systems of government in middle years.

I think the way that we tend to balance it out is that we do a lot of that...at the middle school level so by the time they get to the Diploma that's not when they're learning about for example Australia's system of government. That is when they'd be looking at the issues related to this particular system of government with regards to, for example, global impact the spread of democracy and things like that. (22, G, IB/AC, A, \*)

Others do use an Australian and Asian focus where possible:

Within the History syllabus to have an Australian and an Asian focus but again you've got to work with the guide that you've got, and it's international rather than a national syllabus. We manage it by doing a lot more national focus at the middle school so that when we can get to the Diploma, students already come with that bank of information which can then be used to inform things like their TOK and their CAS choices, and as I said we're working trying to get some stuff going with Bali and Malaysia so we've certainly got in our local backyard focus with that sort of thing. (27, NG, IB, W, \*)

For another curriculum leader the issue of citizenship is addressed through CAS:

And just this one point the CAS which to me is an absolutely essential citizenship type of activity is something that the kids don't do in the others...in any other system...you know we talk about citizenship as such but of giving of yourself but it's not done. Not voluntarily in any way at all [...] It's not just study, it also makes them aware. I've had one child when he started CAS say to me 'I didn't realise there were poor people in Australia'. (22, G, IB/AC, A, \*)

In another school TOK is the vehicle for many of these AC issues:

I'm an English teacher so looking at Asian writers, what constitutes one, and having a greater understanding of the literature of our region. Doing much more with indigenous literature rather than just tokenistic approaches and actually building that in, and I think that comes through as well through TOK. That it's not just...because it shouldn't just be for English, it should be for all subjects and I think we have a very strong top coordinator and he sees, rightly so, the TOK is the core and if we can incorporate basically with what the national curriculum is after in TOK, then we can feed that out to the other subjects so I think we're very much in line and I think what has helped us be in line is we had to do both systems from the beginning, so we were incorporating our board of secondary school studies as well as the IBs, no we're going just with the IB we've already built those components in, especially with geography, economics. (3, NG, IB/AC, A, \*\*)

## Pedagogy

Both curricula have an emphasis on active learning. The IB DP emphasises independence in learning and asserts student responsibility in learning. A key IB DP document indicates the importance of independent learning strategies and learning to learn (The Diploma Programme: From Principals into Practice IB, 2008, p. 7-8) and inquiry, active engagement in the classroom and open discussion (The Diploma Programme: From Principals into Practice (IB, 2008, p. 37). As illustrated in the following quote, DP coordinators also described this emphasis:

I think the highlights overall for the students have been their ability to take ownership of their own learning and to actually control the content more. Control the assessment. Have greater depth in what they do. (3, NG, IB/AC, A, \*\*)

The IB DP curriculum foregrounds inquiry as a central value and thus emphasises pedagogies that require open-ended, questioning, authentic and collaborative approaches to learning. The illustrative case can be found in the dedicated unit 'Extended Essay' where clear and strong statements on the value of inquiry are

made. Further, the curriculum takes on a deep inquiry approach that ensures breadth and depth of knowledge through the unit Theory of Knowledge. Inquiry is linked to Action and Reflection.

Both curricula emphasise problem solving as a central cognitive demand. The Australian documents have an emphasis on thinking deeply and logically whereas the IB DP documents emphasise critical and creative thinking. IB DP documents exceed these parameters of cognitive demands as they extend the learners to 'make reasoned ethical decisions and defend their own beliefs'.

IB DP coordinators noted how the DP makes strong pedagogical links between curriculum, teaching, learning and the learner:

...it starts with the learners, starts with that learner profile, starts with ways of learning, ways of teaching, then it goes into the idea of how can we link all of the subjects together and then that broad liberal education where they do a subject from each of those 6 groups. (26, NG, IB/AC, \*)

Moreover, the IB DP has a strongly developed Inquiry, Action, Reflection model for curriculum engagements.

### Melbourne Declaration commitment to action

A section of the Melbourne Declaration outlines the 'action' that governments will take in partnerships with education stakeholders from across the community, and includes a statement regarding Senior School which emphasises transitions to further study and employment. As discussed earlier, the IB DP has a significant focus on preparing students for further study. It is noted that the IB now additionally offers a Career-related certificate. That course is outside the brief of this report but it is worthy of note within this frame.

The Melbourne Declaration also indicates that an Australian national curriculum should produce the following student outcomes, which are accompanied by descriptions of IB DP alignment:

- A solid foundation in knowledge, understandings, skills and values on which further learning and adult life can be built. The IB alignment with the specifics of these - literacy, numeracy, emotional health and wellbeing, citizenship, ICT and national values have been discussed earlier.
- Deep knowledge, understanding, skills and values that will enable advanced learning and an ability to create new ideas and translate them into practical applications. The IB DP is strongly aligned with this outcome. It could be said to surpass this through the core curriculum of EE, TOK and CAS
- General capabilities that underpin flexible and analytical thinking, a capacity to work with others and an ability to move across subject disciplines to develop new expertise. The IB DP surpasses the parameters of this outcome. This is possible through the links between curriculum and pedagogy in the IB Diploma programme. The approach of inquiry, action and reflection ensure that this outcome moves beyond curriculum statement to learning experience.

The Melbourne Declaration also foreshadowed the learning areas to be addressed by the national curriculum (or the Australian Curriculum as it has become). Alignment with these learning areas is discussed fully in the next chapter that addresses Research Question 2.

Assessment is addressed here in a generic form emphasizing the importance of rigorous assessment and a combined approach including national assessments. The framework of assessment *as, for and of* learning is suggested. The IB DP is strongly aligned through its positioning of assessment as ‘ongoing, varied and integral to the curriculum’. (What is an IB education? 2013 p.5) The IB DP includes internal and external assessment. It is difficult to determine alignment beyond general assessment approaches as the Melbourne Declaration offers only an approach. The States still have their own high stakes assessment processes at senior secondary level even following the introduction of the Australian Curriculum.

Finally, in its commitments to ‘action’, the Melbourne Declaration asserts a commitment to improving outcomes for Indigenous youth and those from low socio-economic backgrounds. This is a national government response outside the remit of a curriculum programme. The underlying issue of access and diversity has been addressed elsewhere.

In summary, the most prominent and distinguishing area for alignment consideration is the location of focus of interest of the overarching documents. The IB is world-focused whilst the Melbourne Declaration is clearly Australian-focused. Overall the IB surpasses the AC largely because of this distinction. At the same time, there are areas where there is a *possibility* for the IB DP to fall short of alignment with the AC because of this difference. These shortfalls are in regard to the AC focus on Australian Indigenous History and communities and attention to the Australian Governmental structures. However, as noted in this chapter, and raised again in other chapters, they do extend to the enacted curriculum in Australian schools. Lastly, taken-as-a-whole, there is uneven alignment in the area of learner descriptors, with many IB descriptors exceeding those in the Melbourne Declaration.

## RESEARCH QUESTION 2

This chapter addresses the following research question:

**Research Question 2:** To what degree does the IB DP curriculum align with the principles and guidelines in the ‘Shape of the Australian Curriculum v2 2010’<sup>5</sup>?

This chapter of the report provides an overall comparison of the IB DP and ‘Shape of the Australian Curriculum’ (AC). Subsequent chapters examine the alignments of individual subjects with the AC. The study’s response to Question 2 has been informed by the same process as for Question 1. However, the current chapter features only a small use of teacher interviews, as these have been used more fully in the individual subject responses in the chapters that follow. Sections at the end of this chapter also explore Research Questions 4 and 5, which focus on the degree of consistency between the IB DP and Australian Qualifications Framework (AQF), with specific regards to IB DP core components (CAS, TOK and Extended Essay). Later chapters will also explore the extent to which individual DP subjects fulfill requirements set out in the AQF for senior secondary schooling and Bachelor degree courses.

### Content of ‘Shape of the Australian Curriculum v4 from 2012

The most recent version of the Shape of the Australian Curriculum document incorporates information about the shape of the senior secondary curriculum and offers additional advice on how the Australian Curriculum meets the needs of the diverse range of students in Australian schools.

The document includes:

- rationale and goals
- development of the Australian Curriculum
- scope
- dimensions
- organisation of the curriculum content in regard to the AC
- quality assurance issues
- teaching, assessing and reporting and
- a statement on towards a world class curriculum

Each of these sections will be addressed in turn to speak to the degrees of alignment between the AC principles and guidelines in this document and the IB DP curriculum.

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<sup>5</sup> The Shape of the Australian Curriculum paper has been update to v4 [http://www.acara.edu.au/verve/\\_resources/The\\_Shape\\_of\\_the\\_Australian\\_Curriculum\\_v4.pdf](http://www.acara.edu.au/verve/_resources/The_Shape_of_the_Australian_Curriculum_v4.pdf).

## IB DP alignment with rationale and goals of the Shape of the Australian Curriculum v4 from 2012

The Melbourne Declaration guides the Australian Curriculum. A key point taken from the Melbourne Declaration is

The Melbourne Declaration emphasises the importance of knowledge, understanding and skills of learning areas, general capabilities and cross-curriculum priorities as the basis for a curriculum designed to support 21<sup>st</sup> century learning (p.4).

The AC document reiterates the goals from the Declaration. In a similar way the IB uses its mission statement and Learner Profile to inform the shape of the Diploma Programme. These goals and descriptors have been mapped in previous sections.

The reference to 21<sup>st</sup> century learning is a significant concept driving the AC curriculum. It is argued that the new Australian Curriculum:

[N]eeds to acknowledge the changing ways in which young people will learn and the challenges that will continue to shape their learning in the future. The curriculum is important in setting out what will be taught, what students need to learn and the expected quality of that learning. (ACARA, 2012, p. 7)

This emphasises attention to changing ways of learning. In a similar way the IB DP identifies 'global contexts for education' which includes a 'highly interconnected and rapidly changing world' (What is an IB education? 2013, p. 6). The IB DP specifically addresses these through 'Multilingualism and intercultural understanding and Global engagement' (What is an IB education? 2013). The terms global and international are defined and an education for 'International mindedness' is offered. Attention to the world perspective is argued as it invites students 'to explore human commonality, diversity and interconnection'. A further distinction of the IB is that all DP students are required to learn more than one language. These more fully elaborated engagements with the discourse of 'global and international' surpass that of the AC.

The AC also clearly points out that the curriculum states **what** students need to learn. The IB, by contrast, offers broad conceptually based and interconnected curricula.

The AC Shape document identifies 11 propositions shaping the curriculum (ACARA, 2012, p.10), these include:

1. The entitlement of each student to knowledge, understanding and skills that provide a foundation for successful and lifelong learning and participation in the Australian community.

The IB DP surpasses this as it offers knowledge concepts and skills for disciplinary and interdisciplinary understanding to become active caring members of local, national and global communities. (What is an IB Education? 2013, p. 6-7)

2. Learning is a continuum

The IB DP is closely aligned as it recognises learning as a continuum for students aged 3 to 19. (What is an IB Education? 2013, p. 1)

3. Students learn at different rates and all can learn

The IB DP is closely aligned as it recognises learners with their own learning styles and needs (What is an IB Education?, 2013, p. 3)

4. Alignment with the Early Years Framework (for children in kindergarten)

The IB DP is closely aligned as (since 1997) the IB continuum of programs incorporates the Primary Years Program, which includes kindergarten as it is designed for children aged 3-12.

5. Building students who can contribute vocationally to the society

The IB DP provides opportunities to meet 'rigorous standards set by institutions of higher learning around the world' (What is an IB Education? 2013, p. 8).

6. That the Australian Curriculum specifies what all young Australians should learn as they progress through schooling

The IB DP is distinctive from the AC in its claim to be critically engaged and not definitive.

7. Depth in preference to breadth

The IB DP may at first glance be regarded as not aligned here as the IB emphasises breadth and balance. However, in the DP students do engage with specific subjects that are disciplined based. The IB does require students to choose a breadth of subjects:

Students study six subjects concurrently. These include two languages, one subject from individuals and societies (group 3), one experimental Science (group 4), one Mathematics subject (group 5), and one subject from the arts (group 6) or another subject from groups 1 to 5. (The Diploma Programme: From Principles into Practice, 2009, p. 5)

Furthermore, depth is identified in the higher level subjects of which DP students are required to take at least three (and not more than four) to complete the full IB Diploma. Also the DP core subjects address depth in significant ways. The Extended Essay (4,000 words) requires an 'in-depth study of a question relating to one of the DP subjects they are studying' (IB Diploma Programme Overview). Theory of Knowledge is engaged to deepen understanding of knowledge:

The TOK course, which requires students to reflect on the nature of human knowledge across all disciplines, provides an excellent platform for building interdisciplinary understanding. As students compare and contrast different ways of knowing and the different methodologies used in areas of knowledge, they are forced to reflect on what it means to be human. (The Diploma Programme: From Principles into Practice, 2009, p. 38)

The strengths of providing both depth and breadth were described by one coordinator in the following way:

...the strength of the program is in the broad-based education that insists that you are educated as a whole person, including the thinking Theory of Knowledge course, including CAS, including the 5 groups and in either the arts or a second group...And secondly I think that the fact that three of those

subjects can be taken at a lesser level and three you can really get your teeth into so it's still allows for personal preference and interest and I think that's a great strength of the program especially the fact that that will be worth the same number of marks as your SL subject. (13, NG, IB/AC, N, \*)

#### 8. Relevance to particular years of schooling

The IB DP curriculum is closely aligned to the AC in its construction around sequential development from early years through to senior years. Like the AC it is suggested that studying in earlier IB programmes is beneficial though it is not essential.

#### 9. Document design for teachers

As with the AC, IB documents are designed for all stakeholders with various documents available online. More specific documents on curriculum areas are more likely to be read by teachers.

#### 10. Implementation context-directed

There is uneven alignment here. The IB seeks 'conversation and regular review' (What is an IB Education? 2013, p.1). The pedagogical approaches are left to the school in the AC whereas in the IB Pedagogy is structured through Inquiry, Action and Reflection.

#### 11. Evidence-based and internationally benchmarked

There is strong alignment here as both the AC and the IB assert they are evidenced based and meet international standards.

### IB DP alignment with scope of the Australian Curriculum

The AC identifies that the curriculum is designed for *all young Australians* and addresses developmental needs, diversity in student population and is organised around learning areas, general capabilities, and cross-curriculum priorities.

The AC is prescriptive in terms of 'what is to be taught' and 'what is to be learnt'. The pedagogical approaches used to teach this content are left to the schools and the teachers.

The educational outcomes outlined in Shape of the Australian Curriculum v4 2012 (ACARA 2012) are directly drawn from the Melbourne Declaration (MCEETYA, 2008, p.13) and reproduced here.

*A solid foundation in knowledge, skills and understandings, and values on which further learning and adult life can be built:*

The curriculum will include a strong focus on literacy and numeracy skills. It will also enable students to build social and emotional intelligence, and nurture student wellbeing through health and physical education in particular. The curriculum will support students to relate well to others and foster an understanding of Australian society, citizenship and national values through the study of civics and citizenship. As a foundation for further learning and adult life, the curriculum will include practical knowledge and skills development in areas such as ICT and design and technology, which are central to Australia's skilled economy and provide crucial pathways to post-school success.



*Deep knowledge, understanding, skills and values that will enable advanced learning and an ability to create new ideas and translate them into practical applications:*

The curriculum will enable students to develop knowledge in the disciplines of English, Mathematics, Science, languages, humanities and the Arts; to understand the spiritual, moral and aesthetic dimensions of life; and open up new ways of thinking. It will also support the development of deep knowledge within a discipline, which provides the foundation for interdisciplinary approaches to innovation and complex problem solving.

*General capabilities that underpin flexible and analytical thinking, a capacity to work with others and an ability to move across subject disciplines to develop new expertise:*

The curriculum will support young people to develop a range of generic and employability skills that have particular application to the world of work and further education and training, such as planning and organising, the ability to think flexibly, to communicate well and to work in teams. Young people also need to develop the capacity to think creatively, innovate, solve problems and engage with new disciplines.

These areas have been addressed in the earlier section in Research question 1. There the IB DP was argued as surpassing these educational outcomes. Alignment in regard to equity and diversity was also addressed there. The IB and the AC do diverge in terms of what is to be taught and pedagogical approaches. The prescriptive position of the AC is evidenced in asserting that the AC identifies what is to be taught and what is to be learnt. This reflects a particular position on knowledge and on learning. The IB, as discussed elsewhere, is based on inquiry and concepts. These reflect a different, more open premise of knowledge and learning. This is not to say that the IB curriculum is not as detailed or full as the AC. The IB offers a broader scope through the linked pedagogical and curriculum programmes.

## **IB DP alignment with AC dimensions**

This section identifies the learning entitlement of each student through the specifications of what is taught and the quality through achievement standards. The Australian Curriculum has a three-dimensional design (ACARA, 2012, p. 15):

- discipline-based learning areas
- general capabilities as essential 21st century skills, and
- contemporary cross-curriculum priorities

It is intended that the following discipline based learning areas will be developed:

- English
- Mathematics
- Science
- Humanities and Social Science (comprising History, Geography, Civics and Citizenship and Economics and Business)
- The Arts (comprising Dance, Drama, Media Arts, Music and Visual Arts)
- Languages
- Health and Physical Education

- Technologies (comprising Digital Technologies and Design and Technologies)

The general capabilities to be included in the Australian Curriculum define knowledge, skills, behaviours and dispositions that can be developed and applied across the curriculum and are:

- Literacy and Numeracy
- Information and communication technology (ICT) capability
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding

The cross-curriculum priorities to be included in the Australian Curriculum are:

- Aboriginal and Torres Strait Islander histories and cultures
- Asia and Australia's engagement with Asia
- Sustainability

These dimensions apply to the whole Australian Curriculum- Foundation to Senior Secondary. In general terms there is strong alignment with the IB DP. The IB DP core of Extended Essay, Theory of Knowledge and Community, Action, Service provide for every DP student engagements beyond ethical understanding into ethical action, beyond critical and creative thinking into reflection on the nature of knowledge. The underpinning perspective of international mindedness and second language acquisition go beyond the parameters of intercultural understanding.

The AC document then addresses main drivers across the years of schooling. The curriculum is devised working on the premise that it is taught across the twelve years of schooling with emphases on literacy and numeracy in early years, all eight areas in upper primary and lower secondary and then individual pathways in upper secondary. In regard to senior secondary:

The senior secondary curriculum provides students with increased opportunities to make choices about pathways through school and beyond. These choices are informed by previous success and enjoyment, future options for training, learning or employment, and the setting in which the learning is to occur. The senior school curriculum offers more opportunities for specialisation in learning, including within the regular school program and through accredited vocational education and training. (ACARA 2012 p. 20)

The IB is also designed across developmental stages with PYP followed by MYP, then DP and IB Career-related Certificate. The PYP is built around knowledge, concepts and skills to explore six trans-disciplinary themes as well as subject areas including arts; language; Mathematics; physical, social and personal education; Science; and, social studies. The MYP include a range of subjects which support student interdisciplinary understanding. Both these areas are distinctive from the AC in their development through concepts and connections rather than solely through discipline knowledge. The DP, like the AC, has discrete subjects but exceeds the AC in its core units– The Extended Essay (EE), Theory of Knowledge (TOK) and Creativity, Action and Service (CAS).

In the Shape of the Australian Curriculum v4 2012 document, diversity of learning needs is then addressed (ACARA, 2012, p.20). Diversity is identified in terms of:

- students with disability
- gifted and talented students
- students for whom English is an additional language or dialect (EAL/D)

Explicit advice to teachers is published to support teachers to address student needs in engaging with the curriculum.

This issue is also addressed in the Melbourne Declaration with the same intent and the same parameters. Alignment with the IB DP was discussed in that section in research question 1. To facilitate reading it is reproduced here:

The IB, like the AC, is concerned with equity and access: We aim to break down barriers and create an environment such that more students are able to access and benefit from an IB education regardless of personal circumstances (IB mission statement, 2013, p. 3). This emphasis on access has strong alignment in these large statements. The AC however goes on to detail how this access must directly include those who are disadvantaged by socio-economic status and by indigeneity. The IB documents do not preclude particular learners. The challenge for providing access to IB education may be read in the use of the words ‘We aim to break down barriers’.

## Organisation of the senior secondary Australian Curriculum

The senior secondary Australian Curriculum comprises rationale and aims, learning outcomes, content descriptions and achievement standards.

Content descriptions detail the knowledge, understanding and skills to be taught and learned within a given subject, including the Australian Curriculum general capabilities and cross-curriculum priorities that naturally align with the subject.

Achievement standards refer to the quality of learning (the depth of understanding, extent of knowledge and sophistication of skill) demonstrated by students within a given subject. The senior secondary achievement standards are subject-specific and align with the major dimensions of learning as described in the learning outcomes and detailed in the content for the subject. Typically these dimensions are categorised into knowledge and understanding, and skills and written as five levels of achievement.

The critical issue here is that State and territory curriculum, assessment and certification authorities continue to be responsible for the structure and organisation of their senior secondary courses and will determine how they integrate the Australian Curriculum content and achievement standards into their courses. They will determine the assessment and certification specifications for their courses that use the Australian Curriculum content and achievement standards and any additional information, guidelines and rules to satisfy local requirements.

For 2013 The Australian Curriculum has developed fourteen subjects

**Mathematics:** Essential Mathematics; General Mathematics; Mathematical Methods; Specialist Mathematics

**Science:** Chemistry; Biology; Earth and Environmental Science and Physics

**English:** English; English as an additional Language; Essential English and Literature

**History:** Ancient History and Modern History

At the time of writing, discussions were being held between ACARA and respective state authorities regarding the implementation of AC within states.

The curriculum for each subject is organised into four units with the last two units cognitively more challenging than the first two. Each unit is designed to be taught in half a school year. There is overlap between current state curricula and the AC.

The IB DP has a significantly different structure to the AC in that all students take the three core subjects and study six discipline based subjects concurrently. These include two languages, one subject from individuals and societies (group 3), one experimental Science (group 4), one Mathematics subject (group 5), and one subject from the arts (group 6) or another subject from groups 1 to 5 (The Diploma Programme: From Principles into Practice, 2009, p. 5).

The individual subjects (not including core) align with the specificity of the AC. Later, the report's response to Question 3 illustrates this through mapping four subjects across the two curricula.

The Diploma Programme model (The Diploma Programme: From Principles into Practice, 2009, p. 5) reflects the commitment to breadth which contrasts with the specialization in the AC. Broad structural comparisons are limited as the AC is mediated in each state with senior secondary assessments being state based.

## IB DP alignment with quality assurance

This area of the Shape of the Australian Curriculum v4 2012 reiterates many of the principles outlined above. It also includes:

Decisions relating to the organisation and delivery of the Australian Curriculum, including such matters as time allocations, rest with education authorities and schools. School and curriculum authorities can specify more teaching time (ACARA, 2012, p.26).

And

Teachers will use a range of different assessment strategies to ascertain what each student has learnt— actual achievement – and will make judgements about the extent and quality of each student's achievement in relation to the Australian Curriculum achievement standards (ACARA, 2012, p.26).

The IB DP documents address issues of Quality Assurance. These note that schools need to be authorised and participate in an ongoing review and development process using the same programme standards and practices. The standards and practices are detailed and relate to Philosophy, Organisation (Leadership and

Structure, Resources and Support), Curriculum (Collaborative Planning, Written curriculum, Teaching and Learning, Assessment). Within each of the above areas DP requirements are identified. Each area is extensively developed moving beyond the generic statements of the AC.

### IB DP alignment with teaching, assessing and reporting

Within the AC, teachers will be required to use A–E grades to report achievement outcomes to parents. Schools or local authorities will determine the style of reports. The IB DP has a fully developed and coherent assessment protocol. These include written examinations at the end of the programme marked by external examiners and in school assessment tasks marked by teachers and then moderated. Assessment is criterion referenced and marks across a range of 1-7 are awarded for each course. State authorities working with AC also have finely developed assessment protocols. This report however is limited to the AC. Given the brevity of the assessment and reporting descriptions in the Shape of the Australian Curriculum document a general alignment is evidenced.

### IB DP alignment toward a world class Australian Curriculum

This section of the Shape of the Australian Curriculum v4 2012 emphasises that the AC has been benchmarked against curricula of leading nations and was developed for young Australians to compete in a globalised world and to thrive in the information-rich workplaces of the future (ACARA, 2012, p.28).

The IB DP is an international education programme which is research based. 'At its heart' it:

- Centres on learners
- Develops effective approaches to teaching and learning
- Works with global contexts and
- Explores significant content (What is an IB education? 2013, p.2))

There is strong alignment between the AC and Diploma in these world class aspirations.

The principles and guidelines of the IB DP are strongly aligned with the 'Shape of the Australian Curriculum v4 2012'. There are structural issues which make alignment decisions difficult to discern. Both the IB DP and the AC must accommodate policy constraints such as quality assurance and have done so in ways that are commensurate with the field. The IB DP can be seen to surpass the AC in regard to the breadth of subjects with which students must engage. The IB DP core units make a significant contribution to that breadth. The next section considers how the core units of the DP are considered in regard to the Australian Qualifications Framework.

### Australian Qualifications Framework (AQF) and Theory of knowledge (TOK), Extended Essay (EE), and Creativity Action Service (CAS)

This section provides an initial response to Research Question 4 and 5, with later chapters exploring the consistency of individual DP disciplinary subjects with Australian Qualification framework.

**Research Question 4:** *Are the standards, principles and practices of the IB DP consistent with AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'?*

**Research Question 5:** *Do the standards, principles and practices of the IB DP provide knowledge and skills that contribute to success at higher AQF levels, specifically Level 7 Bachelor Degree?*

The units Theory of Knowledge, Extended Essay and Creativity Action Service form the core of the IB DP and are compulsory for all students. As these units have no equivalent subjects in the AC they are considered here. They warrant particular attention as they are compulsory and form the heart of the DP curriculum.

The findings indicate that the DP core curriculum units contribute to DP alignment with the AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education' and that DP core curriculum units contribute to some of the key learning outcomes required for success in the AQF level 7 Bachelor Degree qualification. The following discussion will provide an illustration and elaboration of these findings.

The AQF specifies that learning outcomes for Australian Qualifications are divided into three areas: *Knowledge, Skills and Application of knowledge and skills.*

#### For the Senior Secondary Certificate of Education:

*Knowledge* is described as

Foundational knowledge across a range of learning areas and some specialist discipline or technical knowledge.

*Skills* are described as follows

- Literacy, numeracy and communication skills and use of information communication technologies skills to present knowledge and ideas to others.
- Cognitive skills to access, record and act on information from varied sources appropriate to subject disciplines and to move across subject disciplines to develop new expertise.
- Cognitive, technical, communication and creative skills for particular disciplines and to integrate disciplines to solve problems, to underpin flexible and analytical thinking and to work with others.

*Application of knowledge and skills* is described as follows:

- With depth in some areas to tasks or functions in known or changing contexts
- In particular contexts within civic life, work and lifelong learning as successful learners, confident individuals and team members and active and informed citizens
- In contexts that include taking individual responsibility with some direction and some accountability for the quality of outcomes.

Overall, DP core units contribute to the DP alignment with the stated learning outcomes for AQF qualification type 'Senior Secondary Certificate of Education'. The TOK is generally consistent with the AQF learning outcomes of Senior Secondary Certificate of Education. In particular, TOK requires engagement with foundational knowledge of 'knowledge itself'. Furthermore, for the TOK, the specialist discipline knowledge noted in the AQF is the 'nature of knowledge', with the TOK also requiring associated cognitive and other skills consistent with those in the AQF at this level. The AQF demands of 'application of knowledge and skills' are met through recognition of the combined working of TOK with the other core units- EE and CAS and the integration of TOK with other Diploma subjects.

The learning objectives of the Extended Essay are consistent with those of the AQF learning outcomes Senior Secondary Certificate of Education. In particular, the skills required within EE include all those at this level of the AQF and specifically with regards to specialist discipline or technical knowledge and skills including literacy, communication and cognitive skills.

The Diploma objectives of the CAS core component are consistent with the AQF learning outcomes Senior Secondary Certificate of Education. In particular, CAS requires engagement with knowledge around issues of global importance. The skills outcomes of CAS requires strong demand on communication skills in presenting knowledge to others; cognitive skills in addressing the information required for the projects and in solving problems. CAS outcomes are strongly consistent with those in regarding 'application of knowledge and skills' in the AQF as it requires students to engage in new areas in civic life working independently and collaboratively.

### For the Level 7 Bachelor Degree

*Knowledge* is described as:

A broad and coherent body of knowledge, with depth in the underlying principles and concepts in one or more disciplines as a basis for independent lifelong learning.

*Skills* are described as follows:

- Cognitive skills to review critically, analyse, consolidate and synthesise knowledge.
- Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas.
- Cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence; Communication skills to present a clear, coherent and independent exposition of knowledge and ideas.

*Application of knowledge and skills* is described as follows:

- With initiative and judgement in planning, problem solving and decision making in professional practice and/or scholarship.
- To adapt knowledge and skills in diverse contexts.
- With responsibility and accountability for own learning and professional practice, and in collaboration with others within broad parameters.

The findings also demonstrate that DP core curriculum units contribute somewhat to the knowledge and skills which are required for success with many of the stated learning outcomes for the AQF level 7 Bachelor Degree qualification.

The TOK is somewhat consistent with the AQF learning outcomes for Level 7 Bachelor Degree, with the TOK providing a sound basis for engaging with 'knowledge' at the Level 7 criteria. In partnership with EE and CAS, learning outcomes for the TOK are also consistent with Level 7 skills including:

- cognitive skills to review critically, analyse, consolidate and synthesise knowledge
- cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas

- cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence

The standards, principles and practices of EE are somewhat consistent with the AQF learning outcomes for Level 7 Bachelor Degree. EE does provide sound entry to the cognitive skills identified for Level 7. It does not address the professional practice demands of level 7, but is consistent with application of knowledge 'With initiative and judgment in planning, problem solving and decision making in professional practice and/or scholarship' at this level.

The standards, principles and practices of CAS are somewhat consistent with the AQF learning outcomes for Level 7 Bachelor Degree. Of particular note are the reflective, cognitive and creative skills which are central to the study in CAS. The Level 7 'application of knowledge and skills' does include a level of professional practice which is not addressed in CAS.



## RESEARCH QUESTIONS 3, 4 AND 5

This chapter addresses research questions 3, 4 and 5. Research question 3 has a specific focus on comparing Mathematics, Science, English, and History subjects of the IB Diploma and Australian Curriculum.

**Research Question 3:** In what ways do the IB DP content standards align with the content standards described in Australian Curriculum documents?

Research questions 4 and 5 engage with the relationship between the IB DP and the Australian Qualifications Framework. Specifically these research questions ask:

**Research Question 4:** Are the standards, principles and practices of the IB DP consistent with AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'?

**Research Question 5:** Do the standards, principles and practices of the IB DP provide knowledge and skills that contribute to success at higher AQF levels, specifically Level 7 Bachelor Degree?

In order to address these questions the experts from each field of Mathematics, Science, English, and History, Assoc. Prof Hubber, Assoc. Prof Julianne Moss and Dr Claire Charles have analysed the data drawn from the document analysis, survey and interview data with DP coordinators and curriculum leaders, and school case studies.

The data has undergone rigorous analysis and reports have been prepared by a relevant expert in each field. Subject comparisons are presented as reports that stand in distinction from the others, with specialists drawing their conclusions independently for their relevant fields of expertise. While the reports follow the same framework to address the research questions, due to the diverse expert background of each author and the distinctions of each field of study, the reports are at times noticeably differently. For example, the English report is longer than the others, mostly due to the fact that there are multiple English subjects in both the IB DP and the AC.

## MATHEMATICS

Mathematics sits within Group 5: Mathematics of the IB DP. The key IB DP Mathematics subject documents used in the determination of the extent of alignment of the IB DP with the Senior Mathematics AC were:

- Further Mathematics HL guide DP (2012) First examinations 2014
- Mathematics studies SL guide DP (2012) First examinations 2014
- Mathematics HL guide DP (2012) First examinations 2014
- Mathematics SL guide DP (2012) First examinations 2014

The AC Mathematics subject documents used were:

- Essential Mathematics (ACARA 2013)
- General Mathematics (ACARA 2013)
- Mathematical Methods (ACARA 2013)

- Specialist Mathematics (ACARA 2013)

The expert panel was led by Associate Professor Peter Hubber and included postgraduate Science curriculum students at Deakin University: Elizabeth Lim, Caitlin Armfield and Rebecca Powell. The panel looked for similarities and differences between subjects in each curricula with respect to structure, aims, learning outcomes and assessment before making judgements as to the alignment of IB DP with the AC. In terms of curriculum content there were no comparisons made between individual subjects in the DP with those in the AC. Instead, the entire DP Mathematics content was compared with the AC Mathematics content. What was found was that each DP subject had content that mapped directly with more than one AC subject. The group also determined the level of alignment of the DP with the 'Melbourne Declaration on Education Goals for Young Australians' document, 'Shape of the Australian Curriculum' document and the Australian Quality Framework (AQF, 2013).

### General IB DP/AC structure

Both IB DP and AC are two-year programmes. DP students undertake six subjects over the two years consisting normally of three at Higher Level (HL) and three at Standard Level (SL). The total number of recommended teaching hours for the DP course, consisting of 3HL and 3SL subjects, is 1170 Hours. AC students normally undertake five units of study each semester; over two years, totaling 20 units. The total number of recommended teaching hours for the AC Certificate course consisting of 20 units of study is 1000-1200 Hours. Overall, the number of teaching hours for the IB DP is comparable to the number of hours for the AC Certificate. However, it should be noted that DP students also undertake the DP Core which has elements consisting of the Extended Essay, Theory of Knowledge (TOK) and Creativity, Action, Service (CAS) project. Any of these elements may involve connections to Mathematics.

The IB DP and Senior Secondary AC offer four different subjects in Mathematics. Each subject has been designed to meet the needs of different cohorts of students (see Table 1). Both the IB DP and AC offer a subject with a low level of Mathematics that is designed for students who do not wish to pursue further study in Mathematics, as well as a subject with a high level of Mathematics for those students seeking to undertake Mathematics in further studies at tertiary level.

In terms of hours of study, IB DP Mathematics recommends 150 hours for SL subjects and 240 hours for HL subjects. All DP students are required to undertake one Mathematics subject and it is possible for a student to undertake an additional Mathematics subject. This is the case for those students undertaking Further Mathematics HL who are recommended to also undertake Mathematics HL. Therefore, in general, IB DP students might undertake 150 hours (SL), 240 hours (HL) or 480 hours (2 x HL) of Mathematics in their Diploma course.

The senior secondary (AC) Mathematics units have been designed so that they may be studied singly, in pairs (that is, over a year: Units 1/2), or as four units (Units 1-4 over two years). Each unit consists of 50-60 hours of study. Unlike the IB DP, the AC students are not required to undertake a Mathematics subject. Another area of structural difference with the IB DP is that Specialist Mathematics can only be undertaken in conjunction with Mathematical Methods. Therefore, AC students might undertake Mathematics that involves one, two, four or eight units. In general, AC students might undertake 0 hours (0 units), 60 hours (one unit), 120 hours (two units), 240 hours (four units) or 480 hours (eight units) of Mathematics in the AC Certificate course. Table 10 and 11 show the IB DP and AC courses and the students they are designed for. The AC Mathematics offerings allow for a greater range of teaching hours than the IB DP. In addition, the IB DP subjects can only be undertaken

over two years whilst the AC units may be studied singly over one semester, in pairs over a year, or as four units over two years.

TABLE 10: IB DP COURSE/SUBJECT OFFERINGS

| IB DP Courses           | Course/Study is designed for students with:   |
|-------------------------|---|
| Mathematical Studies SL | Varied mathematical backgrounds and abilities. Students taking this course are well prepared for a career in social Sciences, humanities, languages or arts.  |
| Mathematics SL          | A sound mathematical background in preparation for possible future studies in subjects such as chemistry, economics, psychology and business administration.  |
| Mathematics HL          | A good background and competence in Mathematics. Appropriate for study Mathematics at university level either as a subject in its own right or within courses such as physics, engineering and technology.      |
| Further Mathematics HL  | A very strong background and high degree of competence in Mathematics. Appropriate for study Mathematics at university level either as a subject in its own right or as a major component of a related subject. |

TABLE 11: AC COURSE/SUBJECT OFFERINGS

| AC Course              | Course/Study is designed for students with:   |
|------------------------|---|
| Essential Mathematics  | Preparing for post-school options of employment and further training.   |
| General Mathematics    | Who want to extend their mathematical skills beyond Year 10 level but whose future studies or employment pathways do not require knowledge of calculus. The subject is designed for students who have a wide range of educational and employment aspirations, including continuing their studies at university or TAFE. |
| Mathematical Methods   | Whose future pathways may involve Mathematics and statistics and their applications in a range of disciplines at the tertiary level.  |
| Specialist Mathematics | With a strong interest in Mathematics, including those intending to study Mathematics, statistics, all Sciences and associated fields, economics or engineering at university.  |

## Aims

The IB DP aims are broad statements that are the same for each of the Group 5 subjects whereas the AC aims are subject specific. However, many of the AC aims are similar for all subjects. In addition, the AC has more global statements as found in the general capabilities (literacy & numeracy; ICT; critical and creative thinking; personal and social capability; ethical behavior; intercultural understanding). This allowed comparisons of aims between the IB DP and AC on a broad level to be obtained.

The IB DP aims align with the AC aims very well in most areas. However, there is variation in relation to the use of technology. The AC makes reference to the capability to choose and use technology whereas the IB DP refers to an appreciation of the developments in technology. The cross-curriculum area of the AC values the

histories, cultures, traditions and languages of Aboriginal and Torres Strait Islander peoples' past and ongoing contributions to contemporary Australian society, while culture is broadly covered by the DP Group 5 subjects in terms of an awareness of the universality of Mathematics and its multicultural and historical perspectives. The other AC cross curriculum priority, ICT, is specifically referred to in the aims of DP Group 5 subjects.

## Content of curriculum

The IB DP structure allows for students to undertake Mathematics at SL or HL levels. It is also possible for students to undertake two mathematic subjects. This means that the amount of Mathematics, in hours, that might be undertaken by an IB student is 150, 240 or 480 hours. In contrast, AC students might undertake one, two, four unit sequences in one or two Mathematics subjects. This means that the amount of mathematics, in hours, that might be undertaken by an AC student is 50-60, 100-120, 200-240 or 240-480 hours.

In considering the Mathematics courses/subjects on offer by the IB DP and AC in terms of depth of Mathematics, a student wishing the least depth might undertake Mathematics SL in the IB DP or Essential Mathematics in the AC Certificate. A student wishing the greatest depth of Mathematics will undertake Further Mathematics HL with Mathematics HL in the IB DP and a combination of Mathematical Methods and Specialist Mathematics in the AC.

### Alignment of Mathematical Studies SL (IB DP) with AC Mathematics

Mathematical Studies SL and Essential Mathematics represent the lowest levels of Mathematics on offer in their respective Programmes. The depth of Mathematics contained in Mathematics Studies SL is greater than that for Essential Mathematics (AC). It is comparable with the General Mathematics (AC) content for several topics and comparable with Mathematical Methods (AC) for other topics. In addition, the time allocation for Mathematical Studies SL is 150 hours, which is greater than the 100-120 hours allocated to the completion of two units of Essential Mathematics or General Mathematics in the AC. Therefore, a student undertaking Mathematics in the AC certificate is able to undertake Mathematics with less depth and breadth than a student undertaking Mathematics in the IB DP.

In considering the relationship of the curriculum content of Essential Mathematics (AC) with Mathematical Studies (SL), several of the Essential Mathematics (AC) topics either constitute specified prior knowledge for the Mathematical Studies (SL) subject or might be seen as introductory material for the subject. For example, the content specified in the topics of 'Calculations, Percentages and Rates' is specified as prior knowledge for Mathematical Methods (SL) and the topic of 'Graphs' might be seen as introductory materials of the topic of 'Mathematical Models' in the Mathematical Methods (SL) subject.

When considering the extent of alignment of Mathematics Studies (SL) curriculum content with the AC Mathematics offerings there is strong alignment with several topics in the General Mathematics (AC) and Mathematical Methods curriculum (AC). Mathematical Studies (SL) specifies several subtopics in the topics of Logic and Sets (for example, compound statements, truth tables and concepts of set theory), Statistical applications (for example,  $\chi^2$  test) and Geometry (for example, geometry of 3D solids).

### Alignment of Mathematics SL (IB DP) with AC Mathematics

Mathematics SL aligns strongly in several of its topics with Mathematical Methods (SL) (for example, Functions and Equations, and Circular Functions and Trigonometry) and some topics with Specialist Mathematics (AC) (for example, Vectors and Complex Numbers). One subtopic stated in the Mathematics SL content that is not covered in AC Mathematics is Binomial Distribution. This subtopic is one of several listed in the topic of Statistics and Probability.

### Alignment of Mathematics HL (IB DP) with AC Mathematics

Mathematics HL aligns strongly in several of its topics with Mathematical Methods (SL) (for example, Functions and Equations, Circular Functions and Trigonometry, and Calculus) and one topic with Specialist Mathematics (AC) (Vectors). Mathematics HL (IB) offers five optional topics. These topics and their content are contained in the Further Mathematics (AC) content.

### Alignment of Further Mathematics HL (IB DP) with AC Mathematics

Most of the Further Mathematics HL content exceeds in depth the content in any of the AC Mathematics Units. The topics listed extend what is described in Mathematics HL, Mathematical Methods (AC) and Specialist Mathematics (AC). From this finding a student wishing to undertake the greatest depth of Mathematics will undertake the IB DP Mathematics offerings of Further Mathematics HL with Mathematics HL. A student undertaking the AC Mathematics offerings of Mathematical Methods and Specialist Mathematics will undertake significantly less depth of Mathematics. In interviews with current IB DP Mathematics coordinators one commented that 'the much higher offerings of IB DP HL and Further Maths, which are unparalleled, although beyond most [students] at my school'. (10, NG, IB/AC, S, \*\*)

### Non-alignment of AC Mathematics with IB DP Mathematics

The following topics listed in the AC for Mathematics don't align with any of the IB DP Mathematics subjects, as listed in Table 12 below. However, the depth of content of these topics is well within the level of topics listed in the Mathematical Studies SL subject.

TABLE 12: TOPICS IN AC MATHEMATICS NOT LISTED IN IB DP MATHEMATICS CURRICULUM

| AC Mathematics        | Topic  |
|-----------------------|--|
| Essential Mathematics | Earth Geometry and time zones<br>Loans and compound interest   |
| General Mathematics   | Graphs and Networks<br>Time series analysis<br>Loans, investments and annuities<br>Networks and decision Mathematics |

### Mathematics offerings in IB DP/AC courses

Overall, both the IB DP and AC certificate offer a range of Mathematics subjects designed for students with varying abilities and further study aspirations. In interviews with IB DP Mathematics coordinators there was a view, reflected in the quotes below, that AC caters better for the lower end of academic abilities whilst the IB DP caters better for the upper end of academic abilities.

The many IB DP options do offer something for the vast majority of students. One area I do believe is done better locally is for the lower end students – the SACE offers an Applications course with very useful general life skills, which is arguably more relevant than the Mathematical Studies SL course. Contrasting to this are the much higher offerings of IB DP HL and Further Maths, which are unparalleled (although beyond most at my school). (10, NG, IB/AC, S, \*\*)

I believe there is plenty of choice across state and IB DP offerings to allow students to tailor their schooling for any chosen path, and that each allows students to achieve their desired outcomes. (10, NG, IB/AC, S, \*\*)

IB DP is not for every student. Not for every year 12 student. They need to be fairly exceptional young men and women to be able to commit to the workload and the intellectual rigor and just...it does cater for the full range of abilities but it wouldn't suit every year 12 student. (7, G, IB/AC, S, \*\*)

### Learning outcomes

The learning outcomes/objectives of both IB DP and AC Mathematics courses were compared. The learning objectives are generic for all IB DP Mathematics subjects whereas the learning outcomes are specific for the AC Mathematics subjects. The IB DP Mathematics learning objectives (Further Mathematics HL guide 2012 p. 9) are:

1. Knowledge and understanding: recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts.
2. Problem-solving: recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems.
3. Communication and interpretation: transform common realistic contexts into Mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation.
4. Technology: use technology, accurately, appropriately and efficiently both to explore new ideas and to solve problems.
5. Reasoning: construct mathematical arguments through use of precise statements, logical deduction and inference, and by the manipulation of mathematical expressions.
6. Inquiry approaches: investigate unfamiliar situations, both abstract and real-world, involving organizing and analysing information, making conjectures, drawing conclusions and testing their validity.

There are comparable statements in the AC and the IB DP objectives 1, 2, 3, 5 & 6. Objective 4 for IB DP is only reflected in the learning outcomes specified by the AC subject of General Mathematics. However, the AC has a cross curriculum priority of ICT and therefore covers all AC Mathematics subjects.

## Assessment Objectives (IB DP) and Achievement Standards (AC)

The senior secondary AC for each subject is presented as content and achievement standards for integration into state and territory courses and should not be considered as a standalone course. The assessment of achievement standards will come under the jurisdiction of the state and territory authorities. The manner in which the senior secondary AC achievement standards will be assessed by the state and territories has yet to be determined. However, if similar assessment models are used that are currently employed to assess the senior secondary state/territory secondary achievement standards then there will be significant variation, particularly as it relates to the proportion of external assessment employed.

Currently most states and territories externally assess senior secondary subjects in Year 12. The IB DP course externally assesses over the two years of the Programme. Also, the states and territories vary significantly in the proportion of the overall assessment that is externally assessed. For example, the VCE (Victorian Certificate of Education) subjects of Biology and Chemistry (Units 3 & 4) have a 60% external assessment, the New South Wales HSC (Higher School Certificate) subject have a 50% external assessment whilst Queensland's QCE (Queensland Certificate of Education) has 0% external assessment. All authorities have some form of external moderation to the school-based assessment.

The IB DP assessment of Mathematics achievement standards places a far greater emphasis on external assessment than what any of the current states and territories currently employ. Each of the Mathematics subjects, except for Further Mathematics HL, has an 80% external assessment and 20% internal assessment. The internal assessment consists of an individual project. Further Mathematics HL has 100% external assessment.

In interviews with IB DP Mathematics coordinators there were views, reflected in the following quotes, that the greater emphasis on external assessment in the IB DP course made the Mathematics subject more rigorous leading to a greater student understanding of Mathematics and better preparation for tertiary studies.

The DP is quite rigorous over two years with a high exam emphasis. Our local courses for Year 12 are 1 year only with more focus on work through the year that can contribute to the final grade, which I like. (10, NG, IB/AC, S, \*\*)

Due to a final exam IB DP students have a better overall understanding of the maths taught. (22, G, IB/AC, A, \*)

I believe the DP is better preparation for uni with its greater exam focus and independence needed. However, I believe there is plenty of choice across state and IB offerings to allow students to tailor their schooling for any chosen path, and that each allows students to achieve their desired outcomes. (10, NG, IB/AC, S, \*\*)

I also like the fact that IB DP maths exam are worth 80%, and the remaining 20% is now from an individualised exploration. While I am unsure if the new senior Australian curriculum will have designated assessment methods, the current South Australian model has reduced exam weighting to only 30% and has a folio component based on common tasks, reducing individuality. (10, NG, IB/AC, S, \*\*)



In those subjects that have internal assessment, one DP Mathematics coordinator felt that the project provided students with an opportunity to adopt a significant inquiry into an area of Mathematics of their choosing. The coordinator reported:

Each individual student has to have their own individual project and what they're expected to be able to do is to take the Mathematics they've learnt over the previous 18 months and put it together into some sort of self generated idea. (7, G, IB/AC, S, \*\*)

The IB DP assessment was preferred over the state-based assessment by one DP Mathematics leader in terms of the clarity of the criteria for success. The leader reported:

The IB DP is very clear about the criteria for success and if a student can demonstrate those criteria for success, you can get multiple students in the 7s and 6s or whatever. Whereas with SACE [state-based assessment] it appears that there is a certain percentage only that will ever get the A plusses and there's like a normal distribution curve that's then applied and I don't know whether that's true or not but it appears that it's harder to get the really higher grades in the SACE, whereas in the IB DP they clearly describe and they've got exemplars and descriptive of what a seven work looks like. You know if you can demonstrate that you've got the evidence that says you're a seven, then you're a seven. There are no quotas. That's one of the things that I really like about the DP. (7, G, IB/AC, S, \*\*)

## Alignment with Melbourne Declaration on educational goals for young Australians

The Melbourne Declaration on Educational Goals for Young Australians has a commitment to action in supporting senior years of schooling and youth transitions by providing 'all students with high quality education necessary to complete their secondary schooling and make the transition to further education, training and employment' (MCEETYA, 2008, p. 12). The IB DP Mathematics program ensures that all students undertake Mathematics at the Diploma level and there is a range Mathematics subjects on offer to support multiple pathways to meet diverse needs and aspirations of the students. The IB DP Mathematics curriculum provides sufficient information about the various Mathematics subjects for students to make informed choices.

The Melbourne Declaration also has a commitment to action in promoting a world-class curriculum and assessment. The IB DP provides a world-class curriculum that provides students with a solid foundation in Mathematics knowledge, understanding, skills and values on which further learning and adult life can be built. Given that all students need to undertake at least one Mathematics subject the IB DP has a strong focus on numeracy. In terms of assessment The Melbourne Declaration asserts that 'assessment of students' progress will be rigorous and comprehensive. It needs to reflect the curriculum and draw on the professional judgement of teachers and testing, including national testing' (MCEETYA, 2008, p. 14). The IB DP Mathematics has a regime of assessment that is rigorous, reflects the curriculum and is consistent across all schools that offer the Mathematics subjects. There is some element of internal assessment that reflects the professional judgement of teachers but most assessment of IB DP Mathematics subjects is external.

## Alignment with the 'Shape of the Australian Curriculum'

The AC Senior curriculum for Mathematics has been developed within the guidelines given in the 'Shape of the Australian Curriculum' document. Given that this report has established close links between the AC

Mathematics and IB DP Mathematics curricula it follows that the IB DP Mathematics curriculum aligns well with the 'Shape of the Australian Curriculum'.

### Distinguishing features

When comparing the IB DP and the AC in the subject area of Mathematics the following key distinguishing features emerge:

- All IB DP students are required to undertake one Mathematics course as part of their program whereas the AC students do not have such a requirement.
- The IB DP mandates that students undertake at least one course of Mathematics that has at least 150 hours of teaching. This is not the case in the AC Certificate where students may elect to not undertake any Mathematics at all.
- The IB DP places a significant emphasis on external assessment in the form of examinations for all its Mathematics subject offerings.
- The IB DP offers a greater depth of Mathematics in the courses on offer when compared to the AC certificate.

### General views from IB DP teachers

When teachers were asked which curriculum they preferred to teach, IB DP or the AC, there was a variation in responses which reflected different aspects of teaching Mathematics. Some indicative comments are given below:

The IB DP is more flexible, it is not as 'full', it is not as technical and it allows time for an individual student project (which is well restricted in page length and time) The DP also teaches the students to be more independent and rigorous, they are also very well rounded. (4, NG, IB/AC, V, \*\*\*)

I would rather teach the State curriculum, as marking the internal Explorations can be quite a lot of work and very time consuming. However, I do enjoy teaching the Mathematical content of the IB DP and the NSW HSC. (11, NG, IB/AC, N, \*\*\*)

I really don't mind either course offerings. The DP is quite rigorous over two years with a high exam emphasis. Our local courses for Year 12 are 1 year only with more focus on work through the year that can contribute to the final grade, which I like. I probably would choose IB DP for the cohort type and less emphasis on assignment work. (10, NG, IB/AC, S, \*\*)

I prefer the IB DP Curriculum because it is much more content centred, very much of University standard where students graduate knowing and being able to do Mathematics. (14, G, IB, Q, \*\*\*)

### Alignment with the AQF

The AQF specifies that learning outcomes for Australian Qualifications are divided into three areas: *Knowledge, Skills and Application of knowledge and skills* (AQF, 2013, p. 14)

#### For the Senior Secondary Certificate of Education

Knowledge is described as:

Foundational knowledge across a range of learning areas and some specialist discipline or technical knowledge

*Skills* are described as follows:

- Literacy, numeracy and communication skills and use of information communication technologies skills to present knowledge and ideas to others
- Cognitive skills to access, record and act on information from varied sources appropriate to subject disciplines and to move across subject disciplines to develop new expertise
- Cognitive, technical, communication and creative skills for particular disciplines and to integrate disciplines to solve problems, to underpin flexible and analytical thinking and to work with others.

*Application of knowledge and skills* is described as follows:

- With depth in some areas to tasks or functions in known or changing contexts
- In particular contexts within civic life, work and lifelong learning as successful learners, confident individuals and team members and active and informed citizens
- In contexts that include taking individual responsibility with some direction and some accountability for the quality of outcomes.

The IB DP Mathematics curriculum contributes to the alignment of the IB DP to the AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'. In the Knowledge area of the AQF all IB DP students are required to undertake at least one Mathematics subject and thus each graduate student gains foundational knowledge in this discipline. There are clear links between the learning outcomes of the AQF Senior Certificate of Education and the aims and learning objectives of the IB DP Mathematics curricula. With respect to skills area of the AQF the Mathematics curricula clearly enhances students' numeracy skills as well as information communication technology skills. IB DP Mathematics also develops cognitive skills in problem-solving, communication and interpretation and reasoning. IB DP students apply their Mathematics knowledge and skills in a variety of familiar and unfamiliar contexts. They recall, select and use their knowledge of mathematical skills, results and models in both real and abstract contexts to solve problems. They also adopt inquiry approaches where they investigate unfamiliar situations, both abstract and real-world, involving organising and analysing information, making conjectures, drawing conclusions and testing their validity.

### For the Level 7 Bachelor Degree

*Knowledge* is described as (AQF, 2013, p. 48):

A broad and coherent body of knowledge, with depth in the underlying principles and concepts in one or more disciplines as a basis for independent lifelong learning

*Skills* are described as follows:

- Cognitive skills to review critically, analyse, consolidate and synthesise knowledge
- Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas

- Cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence
- Communication skills to present a clear, coherent and independent exposition of knowledge and ideas

*Application of knowledge and skills* is described as follows:

- With initiative and judgement in planning, problem solving and decision making in professional practice and/or scholarship
- To adapt knowledge and skills in diverse contexts
- With responsibility and accountability for own learning and professional practice, and in collaboration with others within broad parameters

The IB DP Mathematics curriculum aligns with several of the AQF learning outcomes for the qualification type 'Bachelor Degree'. The IB DP Mathematics curriculum provides students with a coherent body of mathematical knowledge with depth in the underlying principles and concepts. The curriculum is flexibly designed to meet the mathematical future needs of students whether that is in further education, a career or general living. There are clear links between the cognitive and communication skills specified by the AQF and the learning objectives of the IB DP Mathematics. The IB DP students are expected to apply their mathematical knowledge and skills in problem-solving, reasoning and adopting inquiry approaches in a variety of familiar and unfamiliar contexts.

## SCIENCE

Science sits within Group 4: Experimental Sciences of the IB DP. The key IB DP Science subject documents used in the determination of the extent of alignment of the IB DP with the Senior Science AC were:

- Environmental systems and societies guide (2008) First examinations 2010
- Biology guide DP (2007) First examinations 2009
- Chemistry guide DP (2007) First examinations 2009
- Physics guide DP (2007) First examinations 2009

The AC Science subject documents used were:

- Earth and Environmental Science (ACARA 2013)
- Biology (ACARA 2013)
- Chemistry (ACARA 2013)
- Physics (ACARA 2013)

The expert panel was led by Associate Professor Peter Hubber, and included support from Melanie Isaacs, a former member of the senior curriculum program within ACARA. Other members of the panel included postgraduate Science curriculum students at Deakin University: Elizabeth Lim, Caitlin Armfield and Rebecca Powell. The panel looked for similarities and differences between subjects in each curricula with respect to structure, aims, learning outcomes and assessment before making judgements as to the alignment of the DP with the AC. In terms of curriculum content there were direct comparisons made between subjects of the same name, such as the DP Chemistry and the AC Chemistry. The group also determined the level of alignment of the DP Science curricula with the 'Melbourne Declaration on Education Goals for Young Australians' document, 'Shape of the Australian Curriculum' document and the Australian Quality Framework (AQF, 2013).

## Aims

The IB DP aims for Science consist of broad statements that are the same for each of the Group 4 subjects whereas the AC aims are subject specific. However, many of the AC aims are also similar for all subjects. In addition, the AC has more global statements as found in the general capabilities (literacy & numeracy; ICT; critical and creative thinking; personal and social capability; ethical behaviour; intercultural understanding). This allowed comparisons of aims between the IB DP and the AC on a broad level to be obtained.

The DP Science aims align with the aims of the AC. However, one area of difference relates to where the AC makes reference to students gaining an ability to work with appropriate representations, modes and genres both in terms of understanding and evaluating/analysing Science but also communicating their understanding. The IB DP aims do not refer to these abilities specifically. Nonetheless, there was a view, reflected in the following quote, expressed by an IB DP Science coordinator that the IB DP aims are more clearly stated than those of the AC:

I would teach IB DP because it has clearly stated aims...Australian curriculum has 'wishy-washy' statements. (22, G, IB/AC, A, \*)

## General IB DP/AC Structure

Both the IB DP and AC offer Science subjects in their program. AC offers four Science subjects whilst DP Science subjects total seven and include the four stated above in addition to Sports health and exercise Science (SL only), Design Technology (HL & SL) and Computer Science (HL & SL). IB DP students must undertake one subject from the Group 4 Experimental Sciences. It is possible for students to undertake a second subject. The subjects on offer are Biology, Physics, Chemistry and Environmental Systems and Societies (ESS). Each subject, except for ESS, is offered at higher level (HL) which constitutes 240 teaching hours or standard level (SL) which constitutes 150 teaching hours. ESS is only offered at SL. ESS is a trans-disciplinary subject and therefore will be different to the other group 4 subjects.

Whilst IB DP students must undertake a Science subject this is not the case for AC students who can opt not to undertake any Science in their certificate course. The subjects on offer are the same as for the IB DP, being Biology, Physics, Chemistry and Earth and Environmental Science (EES), although the environmental subject for the AC is different to that for the IB DP. Each subject has four units of study: Units 1 and 2 are at a lower academic level than Units 3 and 4. AC students can opt to undertake one, two or four unit sequences (Unit 3 and 4 are usually taken together) from a subject area.

Each IB DP student may undertake between 1170 and 1340 hours of study (one or two Science subjects) whilst each AC student may undertake between 0 and 2400 hour of study (0–eight Science units). In making comparisons between the IB DP's Standard and High Levels and the AC one might compare the IB DP SL Science subject (150 hours) with the AC Science subject consisting of a Units 1 & 2 sequence (120 hours). The IB DP HL Science subject (240 hours) might be compared with an AC Science subject consisting of four-unit sequence (Units 1-4: 240 hours). A point of variation between the IB DP and AC courses is in the recommended time allocations for practical activities. Students at SL are required to spend 40 hours (ESS specifies just 30 hours) and students at HL 60 hours on practical activities. The AC does not recommend any time allocation for practical activities.

A point of difference between the IB DP and AC courses is the flexibility in the IB DP curriculum with the allowance of optional topics. The AC course does not have optional topics. A common curriculum model applies to all the DP group 4 Science subjects. Students at both SL and HL study a core syllabus, and this is supplemented by the study of options. Students at HL also study additional higher level (AHL) material. Students at both SL and HL study two options. There are three kinds of options:

- those specific to SL students
- those specific to HL student
- those that can be taken by both SL and HL students

## Content of curriculum

The curriculum content for each of the IB DP subjects is far greater in detail than that provided by the AC units. However, there is sufficient information in the AC curriculum to make curriculum content comparisons between the IB DP and the AC. As both the IB DP and AC offer courses in each of the Science disciplines comparisons within each discipline was undertaken. In addition, the IB DP HL was compared to the four unit sequence offered in the AC as both recommend a similar amount of teaching time; 240 hours for the IB DP HL and 200-

240 hours for the four unit AC sequence. The greater specificity of the IB DP curriculum was seen as preferable in interviews with IB DP Science coordinators. An indicative comment was:

I prefer the IB Diploma. Primarily the assessment protocols and syllabus statements of the IB Diploma are less ambiguous. Standards and expectations are clearer in the IB Diploma. (10, NG, IB/AC, S, \*\*)

However, there was also a view that the prescriptive nature of the IB Diploma curriculum can impact on the depth that topics might be taught. For example, one teacher commented that:

The IB DP is very prescriptive which can be very restricting on what you teach in the short time you have. (22, G, IB/AC, A, \*)

A significant point of difference between the IB DP and AC curricula is that the IB DP offers core topics as well as optional topics whereas the AC curriculum does not offer any optional units.

### Comparison of the IB DP HL course and four-unit AC sequence in Physics

There is significant overlap in terms of depth and breadth of many of the topics to be taught in both curricula with regards to Physics. This is the case with the DP core topics and AC curriculum. However, the IB DP prescribes the topic area of digital technology and the subtopic area of oscillations as part of the core component of the course. The AC curriculum does not prescribe these topics. The AC curriculum prescribes the topics of Special Relativity and The Standard Model. The IB DP curriculum does not prescribe these topics as core but it does offer these topics as options. Furthermore, other options offered by the IB DP that are not prescribed in the AC curriculum are Astrophysics and Communication. The IB DP, as mentioned above, provides flexibility in their course with the possibility of options. The SL subject has seven optional topics from which two are selected whereas the HL subject has six optional units from which two are selected. The options allow for greater depth and breadth in their topic areas. In addition, some of the options, like digital technology, communications and medical physics allow for explorations of the applications of the physics key ideas.

### Comparison of the IB DP HL course and 4 unit AC sequence in Biology

There is a large overlap of content taught in the AC and the IB DP Biology subjects. This is particularly the case in comparing the core topics in the DP with the AC. There are several core topics in the IB DP that are not covered in the AC, such as, the greenhouse effect, nucleic acids and proteins and human health and physiology. The optional topics in the IB DP allow for greater depth and breadth than what is offered in the AC curriculum. Optional topic areas include human nutrition, physiology of exercise, neurobiology and behavior, and microbes and biotechnology. Such topics allow students to study real world applications of biology to a greater extent than what is offered in the AC.

When asked which content is more preferable one teacher suggested that there may be different strengths in the IB DP Biology and the AC Biology course:

[I prefer] IB DP as there is little on Evolution in the Australian curriculum and nothing on Reproduction. There is also too much emphasis on Ecology and related subjects. These all have their importance of course. (22, G, IB/AC, A, \*)

Sometimes the best thing about biology is the connections with the lives of the students. So in this way I may prefer the National curriculum – I have however not taught with it so far. (22, G, IB/AC, A, \*)

### Comparison of the IB DP HL course and 4 unit AC sequence in Chemistry

There is significant overlap in terms of depth and breadth of many of the topics to be taught in both the AC and DP chemistry curricula. This is the case with the IB DP core topics and AC curriculum. However, the optional topics in the SL (seven optional topics) and HL (5 optional topics) allow for greater depth and breadth. Each of the optional topics has a strong focus on real world applications. Variation between the two curricula exists in the optional topics on offer by the IB DP course. Optional topics such as Human biochemistry, Medicines and drugs, Chemistry in industry and technology and Food chemistry are not specifically covered in the AC. The natures of these topics are such as to explore specific application of the core material in real world settings. However, whilst the AC does not offer options it does offer content that is similar to some of the IB DP curriculum. For example, Green chemistry/environmental chemistry and Analytical chemistry. The AC does not specify as much real world applications in the manner that the IB DP curriculum does. Thus this may be one area in which the IB DP surpasses the AC.

In the quote below, the depth and rigour of the IB DP Chemistry was clearly highlighted by one of the IB DP Science specialists:

I very much enjoy teaching the IB DP Chemistry course because of its academic rigour and academic thoroughness. As a teacher in a NSW school, I believe the HSC in comparison to the DP has different things to offer students, and I would not wish to suggest that one is necessarily superior to the other as they suit different types of students. My own personal preference, coming from a more academic background (as a PhD graduate) is for the depth and rigour of the IB DP course. (28, NG, IB/AC, N, \*\*)

However, the greater depth was perceived by one IB DP Science coordinator as not accessible for all students.

The Diploma subject that I teach (Chemistry) explores the areas of the subject to greater depth than the State Curriculum. The depth of coverage for the Diploma is not suited to all students. (10, NG, IB/AC, S, \*\*)

### Comparison of the IB DP HL course and four-unit AC sequence in Environmental Studies

There is only one level, Standard Level, of the Environment Studies subject offered by IB DP which requires only 150 hours of work. In contrast the AC offers four units of study equivalent to 200-240 hours of study. The AC covers significantly more content than the IB DP equivalent. Whilst there are some topics that are similar, there is variation on what is offered. Even the title of each subject is different, 'Environmental systems and societies' for the IB DP and 'Earth & Environmental Science' for the AC. Topics that are similar include, 'systems and models', 'human population, carrying capacity and resource use' and 'the issue of global warming'. The AC has a greater focus on the underlying Science of environmental issues with topics like 'development the geosphere, atmosphere, hydrosphere and biosphere, and energy transfers and transformations'. The IB DP subject has a greater focus on the human aspect of the environment with topics like 'pollution management'. Unlike the other Science subjects offered in the DP Environmental Systems and Societies does not specify any optional topics in its structure. However, as mentioned above ESS is a trans-disciplinary subject designed to be both a group 3 and 4 subject.



## Learning outcomes

The learning outcomes/objectives of both IB DP and AC Science courses were compared. The learning objectives are generic for all IB DP experimental Science courses whereas the learning outcomes are both specific for the AC Science subjects. The IB DP learning objectives are:

1. Demonstrate an understanding of:
  - scientific facts and concepts
  - scientific methods and techniques
  - scientific terminology
  - methods of presenting scientific information
2. Apply and use:
  - scientific facts and concepts
  - scientific methods and techniques
  - scientific terminology to communicate effectively
  - appropriate methods to present scientific information
3. Construct, analyse and evaluate:
  - hypotheses, research questions and predictions
  - scientific methods and techniques
  - scientific explanations
4. Demonstrate the personal skills of cooperation, perseverance and responsibility appropriate for effective scientific investigation and problem solving.
5. Demonstrate the manipulative skills necessary to carry out scientific investigations with precision and safety.

There are comparable statements in the AC with the IB DP objectives 1, 2, 3 & 5. However, objective 4 is not reflected in the AC learning outcomes. The AC learning objective, 'communicate Science understanding using qualitative and quantitative representations in appropriate modes and genres' does not feature in the Diploma learning objective statements.

## Assessment Objectives (IB DP) and Achievement Standards (AC)

The senior secondary AC for each subject is presented as content and achievement standards for integration into state and territory courses and should not be considered as a standalone course. The assessment of achievement standards will come under the jurisdiction of the state and territory authorities. The manner in which the senior secondary AC achievement standards will be assessed by the state and territories has yet to be determined. However, if similar assessment models are used that are currently employed to assess the senior secondary state/territory secondary achievement standards then there will be significant variation, particularly as it relates to the proportion of external assessment employed.

Currently the states and territories externally assess senior secondary subjects in Year 12. The DP course externally assesses over the two years of the program. Also, the states and territories vary significantly in the proportion of the overall assessment that is externally assessed. For example, the VCE (Victorian Certificate of Education) Science subjects a 60% external assessment, the New South Wales HSC (Higher School Certificate) subjects have a 50% external assessment whilst Queensland's QCE (Queensland Certificate of Education) has

0% external assessments. All authorities have some form of external moderation to the school-based assessment.

The IB DP assessment of Science achievement standards places a far greater emphasis on external assessment than what any of the current states and territories currently employ. The Science subjects of Biology, Physics and Chemistry SL and HL subjects have 76% external assessment and 24% internal assessment. The internal assessment consists of an individual project and a mixture of short and long-term investigations (such as practicals and subject-specific projects). The Science subject of Environmental Systems and Societies (ESS) subject is only offered at SL; there is no HL option available. ESS has 80% external assessment and 20% internal assessment. For all IB DP subject the internal assessment is externally moderated.

When asked what they liked about teaching DP Science, some IB DP Science coordinators expressed a view, reflected in the following quotes, that the requirements of the internal assessment was driving high level experimental skills:

Rigour with the internal assessment – getting more real Science and statistics into it. (22, G, IB/AC, A, \*)

Having the main component of assessment at the end of the program, rather than ongoing assessment, allows students to be prepared to the best of their abilities. Greater expectations in chemistry data processing allow a greater range of practical experiences. (10, NG, IB/AC, S, \*\*)

I also believe the Internal Assessment requirements really force the student to develop solid experimentation skills, in planning their own experiments and carefully evaluating the results as well as the methodology. They finish the DP more able to design and carry out their own open-ended investigations as well as more thoroughly evaluate the data and their methodology. (28, NG, IB/AC, N, \*\*)

## Alignment with Melbourne Declaration on educational goals for young Australians

The Melbourne Declaration on Educational Goals for Young Australians has a commitment to action in supporting senior years of schooling and youth transitions by providing ‘all students with high quality education necessary to complete their secondary schooling and make the transition to further education, training and employment’ (MCEETYA, 2008, p. 12). The IB DP Science program ensures that all students undertake Science at the Diploma level and there is a range of Science subjects, at two academic levels, on offer to support multiple pathways to meet diverse needs and aspirations of the students.

The Melbourne Declaration also has a commitment to action in promoting a world-class curriculum and assessment. The IB DP provides a world-class curriculum that provides students with a solid foundation in scientific knowledge, understanding, skills and values on which further learning and adult life can be built. Given that all students need to undertake at least one Science subject the IB DP has a strong focus on scientific literacy, which includes literacy and numeracy. In terms of assessment The Melbourne Declaration asserts that ‘assessment of students’ progress will be rigorous and comprehensive. It needs to ‘reflect the curriculum and draw on the professional judgement of teachers and testing, including national testing’ (MCEETYA, 2008, p. 14). The IB DP Science has a regime of assessment that is rigorous, reflects the curriculum and is consistent

across all schools that offer the Science subjects. There is both internal assessment that reflects the professional judgement of teachers as well as external assessment.

The Melbourne Declaration advocates that students develop knowledge that can be applied into practical applications. The IB DP Science subjects allow for a variety of options, most of which deal with applications of scientific knowledge in real world settings. The Group 4 project also allows student to apply their scientific knowledge. This project also allows students the opportunity for interdisciplinary learning and collaboration with fellow students in analysing a common topic or problem. These opportunities of interdisciplinary learning and collaboration are advocated in the Melbourne Declaration.

### Alignment with 'Shape of the Australian Curriculum'

The AC Senior curriculum for Science has been developed within the guidelines given in the 'Shape of the Australian Curriculum' document. Given that this report has established close links between the AC Science and IB DP Science curricula it follows that the DP Science curriculum aligns well with the 'Shape of the Australian Curriculum'.

### Distinguishing features

When comparing the IB DP and AC in the subject area of Science the following key distinguishing features emerge:

- All DP students must undertake a Science subjects whereas the AC does not require this.
- The IB DP places a significant emphasis on external assessment in the form of examinations for all its Science subject offerings.
- There is flexibility in the Science curricula of the IB DP with the availability of optional topics.
- There are opportunities for interdisciplinary learning through the Group 4 Project in the IB DP. The Group 4 project is an interdisciplinary activity in which all DP Science students must participate. The intention is that students from the different Group 4 subjects analyse a common topic or problem. The exercise should be a collaborative experience where the emphasis is on the processes involved in scientific investigation rather than the products of such investigation.

### Alignment with the AQF

The AQF specifies that learning outcomes for Australian Qualifications are divided into three areas: *Knowledge, Skills and Application of knowledge and skills* (AQF, 2013, p. 11).

#### For the Senior Secondary Certificate of Education

Knowledge is described as (AQF, 2013, p. 14):

Foundational knowledge across a range of learning areas and some specialist discipline or technical knowledge

Skills are described as follows:

- Literacy, numeracy and communication skills and use of information communication technologies skills to present knowledge and ideas to others

- Cognitive skills to access, record and act on information from varied sources appropriate to subject disciplines and to move across subject disciplines to develop new expertise
- Cognitive, technical, communication and creative skills for particular disciplines and to integrate disciplines to solve problems, to underpin flexible and analytical thinking and to work with others

*Application of knowledge and skills* is described as follows:

- With depth in some areas to tasks or functions in known or changing contexts
- In particular contexts within civic life, work and lifelong learning as successful learners, confident individuals and team members and active and informed citizens
- In contexts that include taking individual responsibility with some direction and some accountability for the quality of outcomes

The IB DP Science curriculum contributes to the alignment of the IB DP to the AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'. In the Knowledge area of the AQF all IB DP students are required to undertake a Science subject and thus each graduate student gains foundational knowledge in this discipline. There are clear links between the learning outcomes of the AQF Senior Certificate of Education and the aims and learning objectives of the IB DP Science curricula. IB DP Science students are expected to demonstrate an understanding of scientific knowledge and skills, and to apply and use scientific knowledge and skills. They are also expected to construct, analyse and evaluate scientific research questions, methods and techniques and scientific explanations. Students develop and apply their information and communication technology skills in the study of Science. They also develop an awareness of the need for, and the value of, effective collaboration and communication during scientific activities. In the individual Science project IB DP students take individual responsibility for the quality of the outcomes of their investigation.

### For the Level 7 Bachelor Degree

Knowledge is described as (AQF, 2013, pp. 47-48):

A broad and coherent body of knowledge, with depth in the underlying principles and concepts in one or more disciplines as a basis for independent lifelong learning

*Skills* are described as follows:

- Cognitive skills to review critically, analyse, consolidate and synthesise knowledge
- Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas
- Cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence
- Communication skills to present a clear, coherent and independent exposition of knowledge and ideas

*Application of knowledge and skills* is described as follows:

- With initiative and judgement in planning, problem solving and decision making in professional practice and/or scholarship
- To adapt knowledge and skills in diverse contexts
- With responsibility and accountability for own learning and professional practice, and in collaboration with others within broad parameters

The IB DP Science curriculum aligns with several of the AQF learning outcomes for the qualification type 'Bachelor Degree'. The IB DP Science curriculum provides students with a coherent body of scientific knowledge with depth in the underlying principles and concepts. Most of the IB DP Science subjects provide optional materials which allows for significant exploration of the application of Science in real world contexts. The curriculum is flexibly designed to meet the scientific future needs of students whether that is in further education or career or general living. There are clear links between the cognitive and communication skills specified by the AQF and the learning objectives of the IB DP Science. Within the practical dimension of the IB DP Science subjects, IB DP students work independently in their individual project and collaboratively with others in the group project.

## ENGLISH

This section of the report focuses on the senior secondary school subject English. The expert panel was convened by Associate Professor Julianne Moss and included Dr. Joanne O'Mara, an English curriculum expert at Deakin University. The scope and sequence for each subject provided by ACARA and the IB DP were analysed. This was then drawn into a matrix with further interpretations added from the interviews conducted with practicing DP professionals working in Australian schools.

The initial analysis to determine the extent of the alignment of the DP: Studies in English Language A, Language and Literature A, and DP Literature and Performance with English Australian Curriculum, included the following documents:

- Shape of the Australian Curriculum (version 4.0);
- Australian Curriculum Design Paper (version 3);
- AC English Curriculum Documents (Nov 2012);
- AC the shape of the Australian Curriculum Arts (August 2011);
- The Diploma Programme: From principles into practice (2009);
- IB Diploma Programme Language A: Literature guide (2011);
- IB Diploma Programme Language A and Literature guide (2011, updated August 2012);
- IB Diploma Programme Literature and Performance guide (2011);
- IB Diploma Programme Guides, Programme standards and practices (January 2011);
- IB DP Clarifications for the Groups 1 and 2 courses, First Examinations (2013);
- IB DP English A Prescribed list of authors (2011);
- IB DP Prescribed literature in translation, (2011);
- IB DP Prescribed literature in translation, Additional guidance, Critical summaries of selected works (2012).

The AC curriculum and DP English curriculum subdomain comparison and equivalences were found to have five levels of alignment (see Table 13), hence the English section of the report has further contextual detail in comparison to the three other curriculum areas History, Science and Mathematics referenced in this report.

### General IB DP/AC Structure

Senior secondary subjects in the Australian Curriculum are organised into four units. Each unit is designed to be taught in about 'half a school year' of senior secondary studies (approximately 50–60 hours duration including assessment and examinations). However, the senior secondary units have also been designed so that they may be studied singly, in pairs (that is, year-long), or as four units over two years. It is important to note that state and territory curriculum, assessment and certification authorities are responsible for the structure and organisation of their senior secondary courses and will determine how they will integrate the AC content and achievement standards into their courses.

The AC specifications for English are:

- English
- Essential English
- Literature
- English as an Additional Language or Dialect (EAL/D)

While the above subjects are specified in the AC, the expert group confirmed that there are wide variations in how the document is interpreted across the country. For example in South Australia, English Studies are not compulsory at year 12, whereas it is a required study area elsewhere. Also in Victoria students can elect to do English or Language or Literature. In New South Wales (NSW) there is only English, and in Western Australia (WA) you must do English, but can also do Literature.

The DP is a two-year programme where, to adhere to concurrency of learning, all courses are taught over two years. Given the interdisciplinary nature of the DP students are required to choose one subject from each of five groups, although they can choose a second subject from Groups 1 to 5 or undertake an arts subject from Group 6. In the DP curriculum framework, the Group 1 subjects include:

- IB DP English A: Literature
- IB DP English A: Language and Literature
- IB DP Literature and Performance

Normally, three subjects (and not more than four) are taken at higher level (HL), and the others are taken at standard level (SL). At SL the minimum prescribed number of hours is 150 hours and at HL it is 240 hours. From the interviews it would seem that the DP English A: Literature and DP English A: Language and Literature are the most commonly taught English courses in Australian DP schools. From the interviews it also became apparent that some DP schools may not offer all Group 1 subjects:

Yeah, only English is done as Group 1 (at this school), and it's for practical purposes. The IB DP doesn't like us only offering Group 1 English. Our first 5 year review had them telling us that we should be offering other subjects as Group 1... sorry other languages as Group 1 language. The practical issue is that the students require English to study in Australian universities and most of our students want to and as a result of that it is simply more practical for them to do their language A as English. (15, G, IB, Q, \*\*\*)

The IB DP offers a Bilingual Diploma Program (BDP), the AC does not. Moreover, all students study both a first and second language. When the two curricula are compared, this is a mark of significant difference for the English subject area and the language and communication demands of the IB DP curricula. As is well known in the enactment of curriculum, key stakeholders such as the demographics of a school population and the perspectives of parents through school choice can be highly influential in the construction of the curriculum and subjects taught (Connell, 1985<sup>6</sup>). The following quotation from a DP coordinator is illustrative of a school where bilingualism plays a significant role in the curriculum offerings:

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<sup>6</sup> Connell, RW. 1985. *Teachers' Work*. Sydney, Allen & Unwin.

Bilingualism, is very relevant because we have a huge proportion of bilingual students...we have between 66 and 100% bilingual students, and a large proportion of our school every year achieves a Bilingual Diploma for doing their two subjects, two language subjects. So bilingual is something that is very much an everyday reality at the school and you will even have...we even have one class that is actually taught bilingually where students will sometimes ask a question in English and then get an answer in German, and vice versa. (6, NG, IB, N, \*)

It is important to note that when a Bilingual Diploma Program (BDP) is offered it is possible to take two Group 1 courses, each in a different language, in any combination of the three courses offered. This project has not sought to count the number Bilingual Diploma offerings available and completed in Australia. The data from this study points to the likelihood that in Australia Bilingual Diploma offerings and completions are fewer in number than the DP offerings and completions. At the same time, unlike requirements of the AC, all DP students across Australia must undertake studies in a second language. Bilingualism and achievement of a Bilingual Diploma were not common to all of the DP schools interviewed for this project.

### Course hours of study

The DP recommends 240 teaching hours for HL (higher level) subjects and 150 hours for SL (standard level). According to the IB 'Subjects at HL are studied in greater depth and breadth than at SL' (IB Diploma Programme Language A and Literature guide (2011, updated August 2012 p. 3). All of the three Group 1: studies in language and literature subjects are offered at SL with only Literature and Performance not offered at HL. It is noted, however, that Literature and Performance is a trans-disciplinary subject designed to meet the requirements of groups 1 and 6.

In the AC a group of subjects does not form a course. Rather each subject is defined as content and achievement standards for integration into state and territory senior secondary award courses. As stated in the AC English documents, 'each senior secondary English subject draws upon, develops and emphasises different knowledge, understanding, skills and processes related to the strands of Language, Literature and Literacy used in the Foundation to Year 10 curriculum' (Section 5 AC English, np). Prerequisites are not specified in the documents. Specification for senior secondary curricula remain specific to the states and territories of Australia.

### Aims

The AC and DP curriculum documents provide aims and objectives, and content descriptions. The comparison showed variation in the curriculum language and the organisation of the school subject. The variation is evident in:

- How English as a subject is named and organised
- The specifications of set texts and author requirements
- The explicit attention or not to the interdisciplinary nature of the subject/s
- The presence or not of an international outlook and bilingual teaching through the medium of either English, French or Spanish

Specifically, the AC provided rationale and aims, unit description, learning outcomes, content descriptions and achievement standards organised by units. Content descriptions detailed the knowledge, understanding and



skills to be taught and learned within a given subject, including the Australian Curriculum general capabilities and cross-curriculum priorities that naturally align with the subject.

The DP documents refer to the nature of subject and organisation as a 'syllabus'. The syllabus outline details the approach to the teaching and the aims and objectives, content and assessment statements. Content descriptions detail the knowledge, understanding and skills to be taught and learnt within a given subject, including the three course requirements of Theory of Knowledge (TOK), Extended Essay (EE) and Creativity, Action & Service (CAS) that align with the IB DP Hexagon Group 1. Learning outcomes are specified in the syllabus document and in the assessment specifications. In each English-related subject document the overarching principles of the IB DP are noted.

The AC design is subject specific and thus does not use interdisciplinary understandings as a central component of the curriculum design, rather interdisciplinary understandings are presented in the curriculum documents as an addition to the subject specification.

The analysis of the interview data looked for specific comments by DP English teachers of the appreciation of the differences between the DP documents and the AC documents. It is important to stress that in the development of any analysis about matters of curriculum the outcome is, as Yates, Collins and O'Connor (2011)<sup>7</sup> in the only recent volume of empirical research on the Australian curriculum state, 'a genuinely difficult enterprise' (p. 309). This project is small-scale and the interpretive account developed in this project should be read with these caveats in mind.

The IB DP Hexagon Group 1: Studies in Language and Literature is the equivalent found for the AC English subject. Table 13 below compares the AC and IB DP subjects to explain the equivalences.

TABLE 13: ENGLISH CURRICULUM SUB DOMAIN COMPARISON AND EQUIVALENCE

| AC   | IB DP   |
|--|---|
| English  | IB DP English A: Language and Literature<br>(Standard Level and Higher Level) |
| Essential English                                    | No equivalence  |
| Literature   | IB DP English A: Literature<br>(Standard Level and Higher Level)              |
| English as an Additional Language or dialect (EAL/D) | Group 2: Language acquisition<br>(Modern Languages and Classical Languages)   |

<sup>7</sup> Yates, L., Collins, C. and O'Connor, K. (2011). Curriculum in Australia: The challenges, the past and the future. *Australia's curriculum dilemmas: state cultures and the big issues*. Melbourne University Press. 309-325. In Yates, L., Collins, C. and O'Connor, K. (2011) *Australia's curriculum dilemmas: state cultures and the big issues*. Melbourne University Press.

|   |   |
|---|---|
| Performance in the ARTS   | No direct equivalence   |
| (NOTE: AC - ARTS is waiting final endorsement <sup>8</sup> and in senior secondary performance is not a part of AC English suite of subjects) | IB DP Literature and Performance <sup>9</sup> -(Interdisciplinary subject)<br><br>(Standard Level and Higher Level) |

## Content of curriculum

In the AC the four domains of the school subject English are explained as:

- **English** is a study of literature, media and language in which students critically and creatively engage with a variety of texts in all language modes. English extends students' language, literature and literacy skills for a range of purposes and audiences and builds on the knowledge and skills developed in the Foundation to Year 10 curriculum. Students engage in a detailed study of increasingly complex texts and language. They learn how to analyse different interpretations of texts and how to use language modes to achieve specific effects.
- **Essential English** is designed to develop students' literacy skills and for those who wish to undertake a practical English course. Students examine the purpose and language of a range of texts, expanding their ability to understand, evaluate and communicate effectively in and for a range of contexts. *Essential English* develops and refines students' language, literature and literacy skills, which enable them to interact confidently and effectively with others in everyday, community, social and applied learning contexts.
- **Literature** provides students with the opportunity to study literature at an intensive level and aims to engage students in the detailed study of literary texts. It builds on the knowledge and skills developed in the Foundation to Year 10 curriculum. *Literature* deepens students' understanding of conventions common to different types of composition, and refines their understanding of the effects of language through shared experience of texts and the creative process. Learning to appreciate literary texts, and to create their own, enriches students' understanding of human experiences and the capacity for language to communicate those experiences.
- **English as an Additional Language or Dialect (EAL/D)** is designed to develop students' knowledge, understanding and skills in Standard Australian English (SAE). Students studying this subject will benefit in all curriculum areas from explicit teaching of the structure, linguistic features and sociolinguistic and sociocultural aspects of SAE. *EAL/D* provides a variety of language, literature and literacy experiences to accommodate the diverse range of starting points for students learning English as an additional language or dialect. *EAL/D* focuses on how language and texts can vary in structure and usage depending on cultural and social

<sup>8</sup> <http://www.australiancurriculum.edu.au/Curriculum/Overview> accessed March 30th, 2014.

<sup>9</sup> The closest alignment in Victoria is Theatre Studies see, <http://www.vcaa.vic.edu.au/Pages/vce/studies/theatre/theatreindex.aspx> accessed March 30th, 2014

context, and how language can change according to audience and purpose. One of the key focuses of *EAL/D* is the development of students' oral language skills.

In the DP all three courses are designed for students who have experience of using the language of the course in an academic context. It is noted that:

- The language background of enrolled students, however, is likely to vary considerably – from monolingual students to students with more complex language profiles.
- The study of texts, both literary and non-literary, provides a focus for developing an understanding of how language works to create meanings in a culture, as well as in particular texts.
- All texts may be understood according to their form, content, purpose and audience, and through the social, historical, cultural and workplace contexts that produce and value them.
- Responding to, and producing, texts promote an understanding of how language sustains or challenges ways of thinking and being (IB Diploma Programme Language A and Literature guide 2011, updated August 2012, p.4).

The DP Group 1 courses are described through differing subject descriptors at a broad level and overall the development of social, aesthetic and cultural literacy, as well as effective communication skills are emphasised. Acknowledging that the texts presented for study across the courses will sometimes overlap, the DP Language A and Literature guide states:

- There is no aim for each course to define completely separate territory. Instead, the main difference lies in the different areas of focus each takes.
- In the Language A: Literature course, focus is directed towards developing an understanding of the techniques involved in literary criticism and promoting the ability to form independent literary judgments.
- The focus of the Language A: Language and literature course is directed towards developing and understanding the constructed nature of meanings generated by language and the function of context in this process.
- Literature and performance allows students to combine literary analysis with the investigation of the role of performance in our understanding of dramatic literature (2011, updated August 2012, p.4).

The above statements underscore the interdisciplinary construction of the DP Group 1 subjects. English, Language and Literature in the DP are conceived as broad academic study that can potentially be taught and achieved bilingually. In the AC, English is used as the overarching curriculum term and studying *English as an Additional Language or Dialect (EAL/D)* is a study of the structure, linguistic features and sociolinguistic and sociocultural aspects of Standard Australian English (SAE).

The DP also emphasises the TOK, and documents the key relationship between TOK and the Language A: Language and literature course. Further the global dimension and commitment to internationalisation, intercultural understanding and inclusion is evident throughout the course. For example in parts 3 and 4 of the Language and Literature A syllabus, the study of works in translation and the investigation of context highlight the ways in which meaning can change across cultural boundaries.

The lived experiences of teachers who teach in the DP further highlight the presence of interdisciplinarity as a touchstone of the overarching DP curriculum design. For example DP studies were described by one English curriculum coordinator as introducing the affordances of 'inquiry' orientations. In the following quote she points out the extent to which interdisciplinary core skills such as creative thinking skills are not bolted on to one subject, but are core expectations in the DP and IB more broadly:

In terms of the extended essay we conceptualise that as teaching academic creativity and one of the directions that the Diploma is taking generally is that in most subjects in one way or another...and this comes back more to the internal assessment, students have to come up with an issue or a question that they have to investigate.

So in English it's the works in translation where they need to select their books and select what the issue is that they want to write on.

[...] So increasingly you're getting this whole movement towards trying to define a problem. Trying to come up with what the question is. And then go about researching and writing it up. Now I've put that under the label of extended essay and just making the point here that it's moving more and more to the other subjects as well, variations on that, but very much...and it sort of ties into your critical creative thinking skills there, I put that very much in the creative thinking skills. (4, NG, IB/AC, V, \*\*\*)

Another curriculum coordinator illustrated how the DP develops global perspectives:

So there's a requirement in the curriculum that students must use international examples, perspectives, in their learning [...] in subjects like English for example they have to do works in translation from other languages and they're explicitly asked about the perspectives on other cultures that they get. You know the requirement for language B everyone does language B and part of that is cultural learning. (7, G, IB/AC, S, \*\*)

In this way, DP English aligns with some of the key areas of the AC senior English content. In the AC English course there is an emphasis on identifying concerns with the role of the contexts of a text in determining and shifting its meaning, and developing critical literacy.

While a feature of the design of the DP, interdisciplinarity does not necessarily ensure that local contextual specificity is addressed. The potential for a lack of orientation to texts which foreground Australian cultural identity was mentioned by some DP curriculum coordinators:

We don't even really study a lot of Australian material in things like English or History but I'm thinking that as you talk...you know the students are well informed on indigenous issues from an international perspective. For example in English I know that they study the works of Martin Luther King. They study... an Indian novel called the Outsider which is about the caste system and comes from... and it's written by an untouchable. [...] So the kids are quite sensitive...the students are very sensitive to issue of race and class. (7, G, IB/AC, S, \*\*)

You have to pick those texts from a PD or prescribed book list of the IB DP. So if the IB DP has an indigenous text you can pick them, but if they don't, you can't. But then there's a 'free choice' text so we pick things from there. You know over the years we've done things like the Chant of Jimmy Blacksmith and we've done Tim Winton and things like that so there's the option to do it there yep. (17, NG, IB/AC, Q, \*\*)

### English teachers' perceptions on the IB DP compared to the AC

During the interviews teachers and curriculum coordinators provided insights around how they understood the differences between the DP English courses and the AC. These comments affirm the formulations of the expert group alignment and that differences do exist between the conception of the DP English course and that of the AC. English teachers typically did not believe that the DP English was in any way going to be diminished by the new AC. The 'academic' and 'intellectual' nature of the DP curriculum was typically affirmed as evidenced in the comment below:

The diploma program is very academic. Very, very intellectual and very abstract. Well I would say it exceeds all of the demands of the Australian curriculum in all three areas, but I also believe that by the very nature of the design of the IB DP it is relatively easy to design Australian curriculum demands around the expectations of the IB program. I had no difficulty in English. (25, NG, IB, W, \*)

Comparability of the DP English course with the AC was also assured by teachers:

...if you did a tertiary entrance English course with the language course within the IB DP program they're pretty much of a muchness. You know there's nothing within content standards of the Australian curriculum that are not matched by the IB DP and vice versa. I will tell you there are other people who disagree with that. (27, NG, IB, W, \*)

Another teacher commented that:

There are some courses in the IB DP that don't have an equivalent in the Australian curriculum and vice versa. Certainly in the English courses there is no IB English as a second language course if you like, or English as additional language or dialect course, but that's only because...the IB DP is an international program and students then can do any one of a hundred languages as an additional language or a second language. (28, NG, IB/AC, N, \*\*)

The same teacher also pointed out that it is the Essential English component that is not available in the IB DP:

The only one that doesn't really have a equivalent I suppose in the IB DP is what they're calling essential English which because of the IB DP being a matriculation course for those wanting to go to uni, we just wouldn't assume that there would be students who would be wanting to do the IB DP who would be interested in doing that particular course, so that's English. (28, NG, IB/AC, N, \*\*)

### Learning Outcomes

The DP Group 1 objectives are generic in nature whilst the AC learning outcomes have a combination of generic and subject specific learning outcomes.

In the AC each English subject has four units. Content descriptions in each unit vary between subjects according to the distinctive focus of each subject. The achievement standards provide an indication of typical performance at five different levels (corresponding to grades A to E) following the completion of study of senior secondary Australian Curriculum content for a pair of units.

The DP *Language A: Literature*, is a literature course that may be studied in a wide range of languages. The course encourages students to appreciate the artistry of literature and to develop an ability to reflect critically on their reading. In view of the international nature of the IB DP and its commitment to intercultural understanding, the Language A: Literature course does not limit the study of works to the products of one culture or the cultures covered by any one language. Where no teacher is available, a student may be allowed to study his or her particular language, as a school-supported self-taught language A: Literature student (SL only) (see IB Diploma Programme Language A: Literature guide 2011, p.5).

In the IB DP *Language A: Language and Literature* comprises four parts – two relate to the study of language and two to the study of literature. The Language A: Literature is a literature course that may be studied in a wide range of languages. Language A: Literature is a flexible course that allows teachers to choose works from prescribed lists of authors and to construct a course that suits the particular needs and interests of their students. It is divided into four parts, each with a particular focus.

- Part 1: Works in translation
- Part 2: Detailed study
- Part 3: Literary genres
- Part 4: Options (in which works are freely chosen)

The DP *Literature and Performance* is currently available in English, French and Spanish.

The systematic guidance that the DP provides for the English course is acknowledged by teachers and curriculum coordinators. Teachers were able to detail the specifics and range of the assessment practices that they complete as their students make progress through a course which is two years in length. The course information offered by the IBO subject guides are noted as ‘incredibly detailed’ by one DP coordinator who is also an English teacher:

The syllabus guides are incredibly detailed. I’m a lot happier with the new English syllabus than I was with the previous one because that took a little bit of time to lag behind, that was still very much stuck with some definitions that didn’t work anymore but that’s a credit to the IB DP that they then adapted their English, language group 1 subject to now it includes that there are other texts from plays and novels and poetry. They just adapted with that. (25, NG, IB, W, \*)

### Assessment objectives (IB DP) and achievement standards (AC)

The assessment objectives are specified in each of the IB DP subject guides and are specific. The AC documents provide generic assessment descriptors. All of the guides for the DP language areas in keeping with IB principles, stress that teachers are ‘strongly encouraged to design their own course of study and to teach it in a way that takes into account the particular needs and interests of the students and the school’ (IB Diploma Programme Language A and Literature guide 2011, updated August 2012, p.15).

The specificity of the two aligned areas of the AC and DP English and Literature learning aims are illustrated in tables 14 and 15 below:

TABLE 14: MAPPING AC ENGLISH SENIOR SECONDARY AND IB DP LEARNING AIMS

| Australian Curriculum English <sup>10</sup> Aims  | IB DP Language A: Literature learning aims <sup>11</sup>   |
|---|--|
| <p><b>All senior secondary English subjects aim to develop students’:</b></p> <ul style="list-style-type: none"> <li><b>-Skills in listening, speaking, reading, viewing and writing</b></li> <li><b>-Capacity to create texts for a range of purposes, audiences and contexts</b></li> <li><b>-Understanding and appreciation of different uses of language.</b></li> </ul> <p><b>In addition, English aims to develop students’:</b></p> <ul style="list-style-type: none"> <li><b>-Understanding of the use of language for communication</b></li> <li><b>-Appreciation and creation of sustained interpretive, persuasive and imaginative texts in a range of modes</b></li> <li><b>-Engagement in critical analysis and reflection.</b></li> </ul> | <p>The aims of Language A: Literature and Language A: Language and Literature at SL and at HL and of Literature and Performance at SL are to:</p> <ul style="list-style-type: none"> <li>-Introduce students to a range of texts from different periods, styles and genres.</li> <li>-Develop in students the ability to engage in close, detailed analysis of individual texts and make relevant connections.</li> <li>-Develop the students’ powers of expression, both in oral and written communication.</li> <li>-Encourage students to recognize the importance of the contexts in which texts are written and received.</li> <li>-Encourage, through the study of texts, an appreciation of the different perspectives of people from other cultures, and how these perspectives construct meaning.</li> <li>-Encourage students to appreciate the formal, stylistic and aesthetic qualities of texts.</li> <li>-Promote in students an enjoyment of, and lifelong interest in, language and literature.</li> </ul> |

<sup>10</sup> Source <http://www.australiancurriculum.edu.au/SeniorSecondary/english/english/Curriculum/SeniorSecondary#page=1>

<sup>11</sup> Group 1 subjects in the IB consist of three courses *Language a: literature*, *Language A: language and literature* at SL and at HL and *Literature and performance* at SL.

TABLE 15: MAPPING AC LITERATURE SENIOR SECONDARY AND IB DP LEARNING AIMS

| Australian Curriculum Literature <sup>12</sup> Aims  | IB DP Language A: Literature learning aims <sup>13</sup>  |
|--|---|
| <p><b>All senior secondary Literature subjects aim to develop students’:</b></p> <ul style="list-style-type: none"> <li>-Skills in listening, speaking, reading, viewing and writing</li> <li>-Capacity to create texts for a range of purposes, audiences and contexts</li> <li>-Understanding and appreciation of different uses of language.</li> </ul>   | <p>The aims of Language A: Literature and Language A: Language and Literature at SL and at HL and of Literature and Performance at SL are to:</p> <ul style="list-style-type: none"> <li>-Introduce students to a range of texts from different periods, styles and genres.</li> <li>-Develop in students the ability to engage in close, detailed analysis of individual texts and make relevant connections.</li> <li>-Develop the students’ powers of expression, both in oral and written communication.</li> </ul>                     |
| <p><b>In addition, Literature aims to develop students’:</b></p> <ul style="list-style-type: none"> <li>-Ability to respond personally, critically and imaginatively to a range of literary texts drawn from Australian and other historical, contemporary and cultural contexts and traditions</li> <li>-Capacity to contest complex and challenging ideas in order to form their own interpretations informed by a range of critical perspectives</li> <li>-Capacity to critically reflect on connections, resonances and patterns of language that are shared between texts.</li> </ul> | <ul style="list-style-type: none"> <li>-Encourage students to recognise the importance of the contexts in which texts are written and received.</li> <li>-Encourage, through the study of texts, an appreciation of the different perspectives of people from other cultures, and how these perspectives construct meaning.</li> <li>-Encourage students to appreciate the formal, stylistic and aesthetic qualities of texts.</li> <li>-Promote in students an enjoyment of, and lifelong interest in, language and literature.</li> </ul> |

<sup>12</sup> Source <http://www.australiancurriculum.edu.au/SeniorSecondary/English/Literature/RationaleAims>

<sup>13</sup> Group 1 subjects in the IB consist of three courses *Language a: literature*, *Language A: language and literature* at SL and at HL and *Literature and performance* at SL.



The DP syllabus documents report learning outcomes throughout the documents and assessment requirements. This is a mark of difference between the two overarching curriculum designs. The outcomes for the AC English and Literature are provided in the next two tables.

TABLE 16: MAPPING AC ENGLISH SENIOR SECONDARY LEARNING OUTCOMES

| Australian Curriculum Learning outcomes   |   |   |  |
|---|---|---|--|
| English <sup>14</sup>   |   |   |  |
| UNIT 1  | UNIT 2  | UNIT 3  | UNIT 4   |
| <p><b>By the end of this unit, students:</b></p> <ul style="list-style-type: none"> <li>-Understand the relationships between purpose, <u>context</u> and <u>audience</u> and how these relationships influence texts and their meaning;</li> <li>-Investigate how <u>text structures</u> and <u>language features</u> are used to convey ideas and represent people and events in a range of texts;</li> <li>-Create oral, written and multimodal texts appropriate for different <u>audiences</u>, purposes and <u>contexts</u>.</li> </ul> | <p>By the end of this unit, students:</p> <ul style="list-style-type: none"> <li>-Understand the ways in which ideas and <u>attitudes</u> are represented in texts;</li> <li>-Examine the ways texts are constructed to influence responses;</li> <li>-Create oral, written and multimodal texts that experiment with <u>text structures</u> and <u>language features</u> for particular <u>audiences</u>, purposes and <u>contexts</u>.</li> </ul> | <p>By the end of this unit, students:</p> <ul style="list-style-type: none"> <li>-Understand relationships between texts, genres and <u>contexts</u>;</li> <li>-Investigate the effects of different <u>conventions</u> and <u>mediums</u> on responses;</li> <li>-Create, transform and adapt oral, written and multimodal texts in a range of <u>mediums</u> and styles.</li> </ul> | <p>By the end of this unit, students:</p> <ul style="list-style-type: none"> <li>-Understand how content, structure, <u>voice</u> and <u>perspective</u> in texts shape responses and interpretations;</li> <li>-Examine different interpretations of texts and how these resonate with, or challenge, their own responses;</li> <li>-Create cohesive oral, written and multimodal texts in a range of <u>forms</u>, <u>mediums</u> and styles.</li> </ul> |

<sup>14</sup> Source <http://www.australiancurriculum.edu.au/SeniorSecondary/english/english/Curriculum/SeniorSecondary#page=1>

TABLE 17: MAPPING AC LITERATURE SENIOR SECONDARY LEARNING OUTCOMES

| Australian Curriculum Learning outcomes   |   |  |  |
|---|---|--|--|
| Literature <sup>15</sup>  |   |  |  |
| UNIT 1  | UNIT 2  | UNIT 3   | UNIT 4   |
| By the end of this unit, students:  | By the end of this unit, students:  | By the end of this unit, students:   | By the end of this unit, students:   |
| -Understand how language, structure and stylistic choices are used in different literary forms;                           | -Understand how structural and <u>stylistic choices</u> and <u>language patterns</u> shape meaning in literary texts;   | -Understand the relationship between language, culture and identity;                           | -Understand the relationship between the representation of values and ideas in texts and how they are received by <u>audiences</u> ; |
| -Examine the ways in which <u>contexts</u> shape how a text is received and responded to by <u>audiences</u> ;            | -Investigate the interrelationships between texts, <u>audiences</u> and <u>contexts</u> ;                               | -Develop their own analytical responses by synthesizing and challenging other interpretations; | -Justify their own critical interpretation of a text   |
| -Create oral, written and multimodal responses that explore and draw on the structure and <u>style</u> of literary texts. | -Create oral, written and multimodal responses that draw on the <u>conventions</u> , connections and patterns in texts. | -Create oral, written and multimodal texts that experiment with literary <u>style</u> .        | -Create oral, written and multimodal texts blending and borrowing literary <u>conventions</u>  |

The mapping conducted for this report has excluded the DP Literature and Performance syllabus as a direct alignment with the AC senior secondary subject English cannot be made. The inclusion in the DP of a syllabus of this nature, however points to differences in the overall conception of the DP overarching curriculum design and the affordances of the potential learning experiences for students enrolled in the DP compared to the AC and a state-based senior secondary learning pathway. In the DP students have a number of opportunities to study Language, Literature and Performance. The AC senior secondary does not specify Arts sequences. These sequences are available at state level.

<sup>15</sup> <http://www.australiancurriculum.edu.au/SeniorSecondary/english/literature/Curriculum/SeniorSecondary>

Insights from DP teacher interviews indicated a perception among teachers from some Australian states that the DP achievement standards for English are higher than the AC. For example one ACT English teacher commented:

The major differences go to those produced by the examination system as opposed to the continual assessment of the ACT. IB DP students are required to retain their knowledge in ways that ACT students do not have to. However, ACT students can complete double majors in English and that additional practice and focus means that our best English students are usually ACT not IB students. (ACT English teacher)

A South Australian teacher noted:

There are two SACE English subjects offered at our college, English Studies and English Communications. For the purposes of this survey, I will be discussing English Studies as this is the most similar in nature to the IB DP Literature course. Both courses include written, oral and examination tasks although the weighting of the IB exam is higher and has more papers. Both offer a combination of prescribed texts and free choice although the IB DP course allows for greater flexibility. The IB DP Literature course relies more on studying content leading to examinations whereas SACE focuses more on moderated assessment tasks. The SACE course does offer an opportunity for students to study two texts of their own choosing which encourages independent thought. (SA English teacher)

A teacher familiar with the NSW context commented:

The New South Wales English Syllabus is largely bereft of depth. It is become increasingly superficial in an attempt to tick all the politically correct boxes. Giving HSC students only 40mins to write a comparative essay on 3 texts in the final exam encourages learned responses that are often irrelevant to the question and superficial. The course prevents independent thought. The IB gives HL students 2 hours to write one essay. They can take risks. (NSW English teacher)

Finally, a teacher from QLD commented that:

The Queensland Senior English syllabus appears much the same as those of other states on paper, but in practice it is too light on and too easy. The continuous assessment model is cheap and flawed, as it results in a dumbing down of the syllabus aims. Of course, it goes beyond literature to include non-literary texts, as does the new IB DP “Language and Literature” syllabus, which we are aiming to introduce as an option to the Literature course we are currently offering. Queensland students read one, maybe 2 works of literature a year; we read 5 or 6. (QLD English teacher 2)

## Alignment with Melbourne Declaration on educational goals for young Australians

As has been noted in respect to the curriculum areas of Mathematics, Science and History the Melbourne Declaration on Educational Goals for Young Australians has a commitment to action in supporting senior years of schooling and youth transitions by providing ‘all students with high quality education necessary to complete their secondary schooling and make the transition to further education, training and employment’ (MCEETYA, 2008, p. 12). The DP English curriculum has multiple intersection points for comparison and equivalences with

the AC (see Table 13). Career and academic pathways are potentially available through languages, literature, performance and the arts. As likewise noted in the History section of this report the category ‘successful learners’ the Melbourne Declaration refers to three specific characteristics. As is anticipated in a humanities-based subject, the DP English courses contribute alignment where successful learners: 1. ‘think deeply and logically, and obtain and evaluate evidence in a disciplined way as the result of studying fundamental disciplines’, 2: ‘make sense of their world and think about how things have become the way they are’, and 3: ‘are creative, innovative and resourceful, and are able to solve problems in ways that draw upon a range of learning areas and disciplines’ (MCEETYA, 2008, p. 7). DP English and its nested disciplines of language, language acquisition, literature and performance speaks these three characteristics of ‘successful learners’ outlined by MCEETYA because of the emphasis on disciplinary knowledge, interdisciplinary opportunities that are provided through the syllabus design (particularly IB DP Literature and Performance); and independent learning and problem solving which moreover are central touchstones to the overarching DP curriculum design.

Interviewees also provided their thoughts on the alignment of the DP language subjects and the Melbourne Declaration. For example, an English teacher explained how the interplay between enacting an IB curriculum in the Australian context is experienced through both the selection of curriculum resources and the student experience and by implication alignment with the goals of the Melbourne Declaration.

I think the IB DP has the ability and we actually do to take a lot of the components [of the Melbourne Declaration], sort of the awareness of where we are looking at it from Australia’s perspective, the awareness of where we are. I’m an English teacher so looking at Asian writers, what constitutes one, and having a greater understanding of the literature of our region. Doing much more with indigenous literature rather than just tokenistic approaches and actually building that in, and I think that comes through as well through TOK. (3, NG, IB/AC, A, \*\*)

## Alignment with ‘Shape of the Australian Curriculum’

The Shape of Australian Curriculum refers to three areas of curriculum content:

- Learning area knowledge, skills and understanding
- General capabilities
- Cross-curriculum priorities

There are seven general capabilities in the Australian Curriculum, and the DP English contributes to alignment specifically with regard to five of the seven general capabilities:

- Information and communication technology (ICT) capability
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding.

The DP English courses draw upon all of five general capabilities specified above. The DP English course when mapped as the intended curriculum, however shows weak alignment to the Cross-curriculum priorities:

*Aboriginal and Torres Strait Islander histories and cultures and Asia and Australia's engagement with Asia.* The Cross-curriculum priority *Sustainability* likewise reveals weak alignment on the basis of curriculum mapping alone. This does not imply that teachers are not aware of these issues and that the IBDP is impervious to specific contextual issues and needs. For example one English coordinator stated:

I think the IB has the ability to take a lot of the components – the awareness of where we are from Australia's perspective – as an English teacher – Asian writers, what constitutes one, indigenous literature rather than tokenistic approaches.

## Distinguishing features

It is important to note that any distinguishing features of English and the teaching of English are located in the processes of curriculum work and rely on the understanding and interpretation of the intended and enacted curriculum. The qualitative interviews highlight the variation by state and individual schools and unsurprisingly wide variation in curriculum enactment exists. When comparing the DP and AC in the subject area of English the following key distinguishing features and points of comparison emerge:

- DP English has a cultural heritage literary studies focus, where the study of traditional literature in terms of its historical and cultural contexts of production and aestheticism dominates. The DP also includes elements of a readers' response approach, but is dominated by the study of classic texts.
- The AC in contrast, has as its foundation a broader approach to English curriculum that has been developed over time in Australia. Underpinning the Australian approach is the explicit teaching of critical skills, genre approaches to textual production and deconstruction as well as reader response and literary studies.
- The AC pays great attention to multi-literacies, both in terms of textual production and deconstruction. The texts specified for study in Senior English syllabuses across Australia include film, graphic novels, plays and contemporary literature from Australia and Asia. The texts selected have an emphasis on engaging young people through themes relevant to their lives and the cross-curriculum priority of *Asia and Australia's engagement with Asia*.

## Alignment with AQF Australian Qualifications Framework (AQF)

The AQF specifies the following broad criteria for Senior Secondary Certificate of Education (AQF, 2013, p.14).

Graduates at this level will have specialised knowledge and skills for skilled/paraprofessional work and/or further learning:

Knowledge is described as:

Foundational knowledge across a range of learning areas and some specialist discipline or technical knowledge

Skills are described as follows:

- Literacy, numeracy and communication skills and use of information communication technologies skills to present knowledge and ideas to others.

- Cognitive skills to access, record and act on information from varied sources appropriate to subject disciplines and to move across subject disciplines to develop new expertise.
- Cognitive, technical, communication and creative skills for particular disciplines and to integrate disciplines to solve problems, to underpin flexible and analytical thinking and to work with others.

*Application of knowledge and skills* is described as follows:

- With depth in some areas to tasks or functions in known or changing contexts.
- In particular contexts within civic life, work and lifelong learning as successful learners, confident individuals and team members and active and informed citizens.
- In contexts that include taking individual responsibility with some direction and some accountability for the quality of outcomes.

The review of the Group 1 English subjects undertaken for this study deems that IB DP graduates will have the knowledge, skills and application of knowledge and skills to meet the AQF Senior Secondary Certificate criteria. The IBO syllabus documents and the AC however display the learning outcomes in differing formats. In the IB DP Outcomes are presented throughout the documents and assessment tasks. This approach did not appear to impact or influence the sense of confidence exercised by teachers who were familiar with the IB DP syllabus documents and its implementation in Australian schools. The specification of learning outcomes is central to the requirements of the AQF with successful implementation of AQF qualifications dependent on the quality of:

- Accreditation of qualifications
- Delivery and assessment and
- Quality assurance/regulation

## HISTORY

The initial reading to determine the extent of the alignment of the DP History courses with the Australian Curriculum senior History courses included the following documents:

- AC Senior History Curriculum Document for Ancient History,
- AC Senior History Curriculum Document for Modern History and,
- IB Diploma Programme Guide for History.

These documents are also shown in Appendix 6. An expert panel was convened in August 2013 and was led by Dr. Claire Charles and included Dr. Pauline Ho and two experts in History curriculum at Deakin University – Kate Harvie and Kerry Garrard. The expert panel was able to identify several areas in which the DP History courses and the Australian History curriculum appeared to be distinct, which then shaped the uniform language developed on the matrix. The uniform language was developed in relation to content themes, learning outcomes, and achievement standards. The matrix was then populated through closer analysis of the various documents by Dr. Charles and Dr. Ho. Through this process, researchers were able to arrive at some initial findings about the extent to which the DP History courses align with the Australian Curriculum History courses, in terms of content, learning outcomes and achievement standards.

Following this process, specific data related to the DP History courses was gathered during phone interviews with DP coordinators, and a number of surveys returned by DP History teachers, and a face to face interview conducted during one of the case studies in December 2013. This further data has been considered alongside the initial readings and curriculum mapping work undertaken during the expert panel process. As it has been collected through interviews with DP practitioners, it offers important insights into how the DP History course is put into practice in various Australian schools. This is highly significant as it provides crucial information about how DP teachers in Australian schools are addressing key areas that were initially found to be gaps in the DP History course during the initial curriculum mapping process. Thus it has helped the researchers arrive at a more nuanced analysis of the ways in which the DP History course is providing for Australian students to learn the content, knowledge, skills and achievement standards set out in the Australian History Curriculum, by gathering examples of how the DP curriculum is being interpreted and enacted by practitioners.

The findings generally indicate that the content standards in the DP History courses align well with those described in the Australian Curriculum, and that the DP History courses do provide for students to learn the curriculum content and achieve the standards described in Australian Curriculum for senior secondary History. There is some variation, however, in terms of how strong this alignment is in different aspects of the curriculum.

### General IB DP/AC structure

In the DP, History sits within Group Three: Individuals and societies. Both the DP and the Australian Curriculum have two History subjects available for study at senior secondary level. The AC has 'Ancient History' and 'Modern History'. The DP has 'Route 1: History of Europe and the Islamic World' and 'Route 2: 20th Century World History'. The AC History subjects contain four units, each of which is taken over a half year– comprising a total of two year's study. Students have the option of completing a total of four units over two years, or taking two units over one year at either Year 11 or 12. The DP History subjects are not as clearly divided into

units and each is taught over a full two years. DP History can be taken at Standard Level (SL) or Higher Level (HL).

## Aims

The DP History syllabus contains broad aims that apply to both Route 1 and Route 2. These aims emphasise the development of broad historical skills and a connection back to the IB learner profile. While there is some level of alignment with the aims presented in the Australian History curriculum, the Australian Curriculum aims tend to be more subject specific, placing more emphasis on learning specific subject content. In the AC, the aims more closely resemble learning outcomes than in the DP, where the aims are much broader and they are explicitly linked back to the IB learner profile.

## Content of curriculum

One of the most obvious gaps in the DP History curriculum compared with the Australian History curriculum in terms of subject content is that the DP does not cover any time period prior to the Common Era. The AC contains an entire subject 'Ancient History' which is based around this time frame. Route 1 in the DP, however, focuses on timeframes and events between 500 and 1500 AD that are not represented at all in the AC. The DP has a much stronger focus on religion, particularly Islam, and this is a clear area in which it surpasses what is offered in the AC when it comes to Route 1. In terms of the lack of Ancient History on offer in the DP, two of the DP teachers interviewed made mention of this. One stated that 'there's no ancient History, and that is something I've seen a little bit as a flaw of it because the students really love it, they love ancient History a lot of them but there isn't that option' (5, NG, IB/AC, N, \*). The other teacher suggested that this may be something the IB DP could consider revising, stating that 'it's one aspect of the IB DP which I think I would like to see changed. I'd like to see there being an Ancient History course in the IB' (28, NG, IB/AC, N, \*\*).

Alignment of content is much stronger when it comes to the other two subjects, 'Modern History' in the AC, and 'Route 2' in the DP. It appears from the interviews conducted that many schools in Australia are choosing Route 2 over Route 1, with one teacher stating that 'Route 1 I'm not that familiar with and I deliberately steered away from it because I didn't think my students would like it' (5, NG, IB/AC, N, \*). Many key events and topics such as war and conflict, the world wars, and social movements such as the Russian Revolution and the Arab Israeli conflict are covered in both the AC and the DP Route 2. For example, the DP History course mandates one out of three key prescribed subjects which are: 1: Peacemaking, peacekeeping–international relations 1918-36, 2: the Arab–Israeli conflict 1945-79, and 3: Communism in crisis 1976-89. The AC course includes these same topics in the following locations: Unit 4: 'The modern World since 1945', and Unit 3: 'Modern Nations in the 20<sup>th</sup> Century'.

One area in which there appears to be a clear gap in the DP History course is in relation to indigenous cultures and knowledge, which features very little in core curriculum documents for Route 2. Moreover, it is only mentioned a couple of times in relation to some of the HL topics. Indigenous Australian culture and knowledge is, however, a clear element of the AC both in its overarching statements and aims, and in the Modern History curriculum document, where it is mentioned particularly in Unit 2: 'Movements for change in the 20<sup>th</sup> Century', in which 'recognition and rights of indigenous peoples' is presented as one of five possible twentieth century movements, out of which all schools select two. When asked about this in interviews, many DP teachers confirmed that Indigenous Australians are not a focus in the DP, with some stating that a national focus is covered more in the middle years so that, in the senior years, students will be offered a more global,



international perspective. One teacher commented that: 'students at our school study aspects of Indigenous peoples and cultures at various times from Reception to Year 10' (10, NG, IB/AC, S, \*\*). Another stated that: 'we don't specifically address Australian Indigenous History or the way that our country is governed. But that knowledge is assumed understanding by the time they get to 11 and 12 in the diploma and probably in the HSC too. So I guess it would be more relevant perhaps in the middle years of schooling and the primary years of schooling' (8, NG, IB/AC, N, \*).

One of the most salient findings on the basis of this analysis is that the DP tends to make up for gaps that may be present in the core curriculum (SL) in its HL options, which offer scope for detailed study of particular issues or nations or events which are not possible within the AC. For example, the other key gap in the DP found by the expert panel was in relation to Asia and Australia's engagement with Asia, which is a clear focus in the AC. This focus does not appear to be as strong within the DP History curriculum. It is evident that the DP does not include much attention to Asia in its core curriculum for Route 2, whereas the AC includes an obvious focus on Asia in Units 3 and 4. However, one of the HL options in the DP is dedicated to the History of Asia and the Oceania, which is where the DP allows far more scope for the study of Asia than what is possible in the AC, which does not include SL and HL options for study. Furthermore, interviews with DP teachers around Australia indicated that many do choose this particular HL option on the History of Asia and the Oceania as a region for study because of Australia's location in the Asia Pacific and the cultural heritage of many Australian students. As one teacher stated:

You have to design your own program within a framework and so in the History framework we chose to study our region particularly for the same reasons that the national curriculum has tried to link Australia with the region...we've chosen to do Asia. East and South East Asia and Oceania it's called. We've chosen that as a deliberate thing to try and link into country of origins to for a lot of students but it's thinking about, in the future Australians are going to need to know more about Asia. So we've made deliberate choices to do things like that. (7, G, IB/AC, S, \*\*)

This is a clear example of how, in practice, DP teachers are developing History courses that are responsive to the region and thus align with the focus in the AC on Asia. This practice of choosing a regional focus on Asia in the DP History course was also mentioned by seven other History teachers in interviews and surveys, suggesting that the practice is common among Australian schools offering History in the DP. Another teacher provided key insight into how the countries of origin of students shapes the way the DP responds to Asia and the region, as she commented that some students from Asian countries use the Extended Essay in History to investigate an aspect of the History of the region:

If they're international students it's often something to do with their own History that might not be covered in the course. We've got an Indonesian boy this year, he's looking at how the Japanese occupation helped or hindered Indonesia's move towards independence for example. Another Cambodian boy a couple years ago did one on Pol Pot. (24, NG, IB, V, \*\*\*)

Overall, our analysis thus indicates that the DP for the most part does provide for students to learn the content presented in the Australian curriculum modern History course, perhaps with the exception of a clear area of study concerning indigenous peoples.

## Learning outcomes

The learning outcomes in the DP History Guide are expressed in a broad way, and relate to the development of historical skills more than to specific knowledge about a topic or subject, which the AC tends to emphasise. The IB DP curriculum documents have a sustained emphasis on historiographical skills and critical thinking, rather than the focus being on learning particular *content*. For example, one of the key stated learning outcomes is to ‘show an awareness of different approaches to, and interpretations of, historical events related to the prescribed subject’ (History Guide, 2008, p. 14). Another stated learning outcome for DP History is to ‘critically engage with a range of historical sources related to the prescribed subject in order to comprehend, analyse and evaluate them in a historical context’ (History Guide, 2008, p. 14). This means it aligns well with the key stated learning outcomes in the AC around contestability, reliability and interpretation of historical evidence. Key learning outcomes stated in the AC in relation to historical skills are: ‘apply key concepts as part of a historical inquiry, including evidence, continuity and change, cause and effect, significance, empathy, perspectives and contestability’ (Senior Secondary Curriculum, Modern History, 2012, p. 28) and use historical skills to investigate distinctive features of the historical period to ‘frame questions for research; interpret sources and evidence with a focus on reliability and usefulness; and use evidence to evaluate interpretations and representations, and communicate historical arguments’ (Senior Secondary Curriculum, Modern History, 2012, p. 28).

This area of alignment was reinforced in our teacher interviews, with one DP teacher stating: ‘I think the emphasis too [in DP History] is on the those high order skills so in History there’s an extraordinary amount of content that we cover but it’s not about regurgitation of facts, it’s actually about them formulating argument and opinion and perspective but using their knowledge to support’ (5, NG, IB/AC, N, \*). This suggests that the important skill of formulating a historical argument emphasised in the DP History curriculum aligns with the AC’s stated learning outcome of using ‘historical skills to investigate particular developments...and the nature of sources; determine the reliability and usefulness of sources and evidence; explore different interpretations and representations; and use a range of evidence to support and communicate an historical argument’ (Senior Secondary Curriculum, Modern History, 2012, p. 8). While the language is not exactly the same across the two History curriculums, the expert panel determined that many of these stated learning outcomes in relation to historical knowledge and skills are comparable between the DP and the AC. One gap that was found in the DP was in relation to the preservation of ancient sources. One of the learning outcomes in the AC is to ‘understand the nature of evidence of the ancient past and issues relating to the reliability and usefulness of evidence’ (p. 6). The DP has no comparable learning outcomes as it does not offer any History courses that deal specifically with the preservation and conservation of evidence from the ancient past. This is, however, included in the DP unit Theory of Knowledge, as this unit includes History as an area of study.

## Assessment objectives (IB DP) and achievement standards (AC)

Achievement standards are framed differently in the DP from how they are framed in the AC. In the AC, the terminology of ‘achievement standards’ is used, whereas the DP refers to ‘assessment objectives’. The AC History curriculum depicts a range of achievement standards, which provide an indication of typical performance at five different levels (corresponding to grades A to E), whereas the DP puts forward objectives that are expected to be demonstrated in assessment tasks. The DP History assessment objectives feature historical skills to a greater extent than the AC achievement standards, which are divided equally between ‘knowledge and understanding’ and ‘skills’. This may be reflective of how the DP integrates particular

historical skills (which are linked with the IB DP learner profile) throughout the aims, content, and standards to a greater extent than the AC. The AC, by contrast, distinguishes and compartmentalises the content knowledge and the historical skills across all sections of the History curriculum. The DP has two levels of achievement standards- Higher Level and Standard Level. This is different from AC History, which only has one set of achievement standards.

Our analysis indicates that the standards of achievement in relation to historical knowledge and skills in the DP would appear to meet the standards required in the AC. Moreover, the DP holds the potential to surpass the AC when it comes to producing a sustained historical argument supported by evidence under examination conditions. Some teachers' views concurred with this, as seen in the following quotes:

Implicitly the IB DP has higher expectations of the retention of knowledge of things as well as themes, than the AC and national curriculum due to the summative nature of the assessment. (22, G, IB/AC, A, \*)

Compared with the SACE, the DP would expect a higher standard of work to reach equivalent grade levels. Additionally, in the IB DP, the externally assessed exam is worth 80% of a HL student's grade, and 75% of an SL student's grade. This means that IB DP students need to be more thorough in their development of historical skills and knowledge, as in exams they don't have the ability to seek advice or find sources to assist them. (10, NG, IB/AC, S, \*\*)

The ability to pose an argument and have a broader context of source material is...superior in the IB DP. (4, NG, IB/AC, V, \*\*\*)

In the next section, alignment between the Melbourne Declaration on Educational Goals for Young Australians (MCEETYA, 2008) and the DP History course will be considered. Alignment between the DP History course and the Shape of the Australian Curriculum document (ACARA) will also be considered. This is in order to show how the DP History course contributes to the overall level of alignment between the DP and the AC.

## Alignment with Melbourne Declaration on educational goals for young Australians

On the basis of our analysis, there are particular ways in which the DP History curriculum aligns with The Melbourne Declaration on Educational Goals for Young Australians, and assists students to become 'successful learners'. Within the category 'successful learners' the Melbourne Declaration refers to three specific characteristics where the DP History course contributes to alignment. These are that successful learners: 1. 'think deeply and logically, and obtain and evaluate evidence in a disciplined way as the result of studying fundamental disciplines', 2: 'make sense of their world and think about how things have become the way they are', and 3: 'are creative, innovative and resourceful, and are able to solve problems in ways that draw upon a range of learning areas and disciplines' (MCEETYA, 2008, p. 7). DP History speaks particularly to these three characteristics of 'successful learners' outlined by MCEETYA because of the emphasis on evaluating evidence in the History course, the role History plays in understanding how things have become the way they are, and the significance of problem solving in the DP History course. There is an emphasis in DP History on independent learning and student problem solving. This emphasis was reiterated in our interviews with IB DP practitioners, with teachers offering comments such as:

In terms of the extended essay we conceptualise that as teaching academic creativity and one of the directions that the diploma is taking generally is that in most subjects in one way or another...and this comes back more to the internal assessment, students have to come up with an issue or a question that they have to investigate...In History for example they need to come up with an issue that they want to investigate...it sort of ties into your critical creative thinking skills. (4, NG, IB/AC, V, \*\*\*)

The main way in which the DP History course does not align with the goals set out by MCEETYA is in relation to the emphasis on Indigenous Australians and reconciliation within the Melbourne Declaration. The Melbourne Declaration opens by stating in the preamble that 'As a nation Australia values the central role of education in building a democratic, equitable and just society – **a society** that is prosperous, cohesive and culturally diverse, and **that values Australia's Indigenous cultures as a key part of the nation's History, present and future**' (MCEETYA, p. 3). The DP History courses, as stated above do not emphasise Indigenous Australian cultures.

### Alignment with 'Shape of the Australian Curriculum'

The Shape of Australian Curriculum refers to three areas of curriculum content:

- Learning area knowledge, skills and understanding
- General capabilities
- Cross-curriculum priorities

There are seven general capabilities in the Australian Curriculum, and the DP History contributes to alignment specifically with regard to the fourth: 'critical and creative thinking'. This is described in the Shape of the Australian Curriculum document as follows: 'Students develop critical and creative thinking as they learn to generate and evaluate knowledge, ideas and possibilities, and use them in combination when seeking new pathways or solutions. In the context of schooling, critical and creative thinking are integral to activities that require reason, logic, imagination and divergence' (Shape of the Australian Curriculum, 2010, p. 19). The DP History course has a clear emphasis on evaluating knowledge, and developing historical arguments based on reason and logic, thus contributing to alignment with this particular general capability. The DP History course also contributes to alignment with the seventh general capability of 'intercultural understanding' as one of the learning outcomes for DP History is to 'understand and evaluate different approaches to, and interpretations of historical issues and events' (History Guide, 2010, p. 14).

The DP History course does not particularly assist with alignment between the DP and the Shape document when it comes to the Cross-curriculum priorities: *Aboriginal and Torres Strait Islander histories and cultures*; *Asia and Australia's engagement with Asia*, and *Sustainability*. However, with respect to a focus on Asia, DP History offers some scope for this, and, as indicated through our interviews and teacher surveys, a number of schools in Australia are finding ways of ensuring that Asia is explored in DP History, thus contributing to alignment between the DP and this particular cross-curriculum priority.

### Distinguishing features

When comparing the DP and AC in the subject area of History the following key distinguishing features emerge:

- The DP History courses do not include any attention to Ancient Civilisations, but the Route 2 course covers most of the content being offered in the AC modern History course.
- The DP History and the AC History courses are comparable when it comes to learning outcomes around historical skills, but the DP course surpasses the AC with regard to particular academic skill development, such as constructing a written argument under exam conditions.
- The DP History courses particularly contribute to DP alignment with the AC general capabilities of 'intercultural understanding' and 'critical and creative thinking' and also with the cross-curriculum priority of 'Asia and Australia's engagement with Asia'.

## Alignment with the AQF

The findings indicate that the DP History curriculum contributes to the DP alignment with the AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education' and that DP History contributes to some of the key learning outcomes required for success in the AQF level 7 Bachelor Degree qualification. The following discussion will provide an illustration and elaboration of these findings.

The AQF specifies that learning outcomes for Australian Qualifications are divided into three areas: *Knowledge, Skills and Application of knowledge and skills*.

### For the Senior Secondary Certificate of Education:

*Knowledge* is described as

Foundational knowledge across a range of learning areas and some specialist discipline or technical knowledge.

*Skills* are described as follows

- Literacy, numeracy and communication skills and use of information communication technologies skills to present knowledge and ideas to others.
- Cognitive skills to access, record and act on information from varied sources appropriate to subject disciplines and to move across subject disciplines to develop new expertise.
- Cognitive, technical, communication and creative skills for particular disciplines and to integrate disciplines to solve problems, to underpin flexible and analytical thinking and to work with others.

*Application of knowledge and skills* is described as follows:

- With depth in some areas to tasks or functions in known or changing contexts
- In particular contexts within civic life, work and lifelong learning as successful learners, confident individuals and team members and active and informed citizens
- In contexts that include taking individual responsibility with some direction and some accountability for the quality of outcomes.

As demonstrated in the findings presented above, DP History contributes to the DP alignment with the stated learning outcomes for AQF qualification type 'Senior Secondary Certificate of Education'. In particular, it does this by developing specialist discipline knowledge, literacy skills, communication skills, problem solving and analytical thinking. DP History assists students to become successful learners, and confident individuals and

active and informed citizens. It also encourages students to take individual responsibility through the development of an independent investigation in the internal assessment.

### For the Level 7 Bachelor Degree

*Knowledge* is described as:

A broad and coherent body of knowledge, with depth in the underlying principles and concepts in one or more disciplines as a basis for independent lifelong learning.

*Skills* are described as follows:

- Cognitive skills to review critically, analyse, consolidate and synthesise knowledge.
- Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in some areas.
- Cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence; Communication skills to present a clear, coherent and independent exposition of knowledge and ideas.

*Application of knowledge and skills* is described as follows:

- With initiative and judgement in planning, problem solving and decision making in professional practice and/or scholarship.
- To adapt knowledge and skills in diverse contexts.
- With responsibility and accountability for own learning and professional practice, and in collaboration with others within broad parameters.

The findings also demonstrate that DP History contributes to the knowledge and skills which are required for success with many of the stated learning outcomes for the AQF level 7 Bachelor Degree qualification. In particular, DP History helps develop specialist discipline knowledge; cognitive skills to review critically, analyse, consolidate and synthesise knowledge; communication skills to present an independent exposition of knowledge and ideas; and it helps foster critical thinking and develops the capacity to exercise judgement in identifying and solving problems with intellectual independence. DP History assists students to take individual responsibility through the development of an independent investigation in the internal assessment.



## CASE STUDIES

The two case studies conducted for the research build on the interviews with the IB DP coordinators and surveys of curriculum leaders, and offer depth to the curriculum mapping process that document analysis alone does not reveal. The two case studies are presented here under the acronyms *Green Acres School* and *Lavender Hill School*, each exploring the background of the school and the IB Diploma Programme within the school, followed by a section that highlights the important findings identified through the case studies.

### Green Acres School

#### Background

Green Acres School is an independent co-educational school situated in a farming town approximately 60 kilometres from the CBD of one of Australia's capital cities. Green Acres School was established in the 1980s and is situated not far from the town's centre. It operates as both a day school and a boarding school. The school has a student body numbering around 400 which includes both local students and international students from over fifteen different cultural groups.



The international students attend the school for varying periods of time and they are particularly well represented in the senior school student cohort.

The Green Acres school community appears to be relatively affluent overall and the school offers scholarships to local Australian students on the basis of academic achievement. The school's website and publicly available reports emphasise the high achievements of students in terms of ATARs and attaining entrance to elite universities worldwide.

The teaching staff comprises around 50 individuals who either live locally or commute each day from closer to the city's CBD. A number of the teachers have been working at Green Acres School for an extended period and in interviews carried out with teachers during the case study visit to the school, the visiting researcher gained the impression that this was for two key reasons. Firstly, the students are understood by the teachers to be well behaved, intelligent and inquisitive learners. When the researcher commented to one of the teachers, 'it seems each of the teachers I've interviewed has been here for quite a long time,' the teacher replied that 'I think the students have a lot to do with that...the kids are very teachable...the focus is far more on teaching the subjects rather than classroom control.'

A further theme arising in the teacher interviews was that the IB DP engages the teachers and enables them to learn new knowledge as they teach the IB DP curriculum. One teacher commented:

I do like the IB DP because it's intellectually challenging for me as a teacher myself, so I'm learning a great deal by teaching it...I've studied [History] at university but I think the IB DP course, you know, I've filled in lots of gaps that I had even from my university course.

Similarly, another teacher commented, in relation to teaching the IB DP Mathematics curriculum:

I enjoy the academic challenge of it...the options are quite challenging to the kids but also interesting to teach so there is an academic component that keeps us stimulated...There is definitely an academic sort of stimulus that just keeps you going and I think that's what's exciting and I enjoy doing it.

This sentiment was particularly the case with regard to the Internal Assessments and Extended Essays which teachers identified as tasks that expanded not only their students' skills and knowledge but also their own knowledge as teachers. As students independently research specific topics in depth, the teachers are also drawn into learning about these topics. The IB DP learner profile aspect of lifelong learning was thus in evidence at Green Acres School in relation to both the students and the teachers.

### Visit to Green Acres School

In late 2013, one of the researchers interviewed both the IB DP coordinator and one of the senior school coordinators of Green Acres School by telephone, with the case study visit negotiated at the same time. The same researcher visited Green Acres School one day early in the 2014 school year and spent around five hours at the school.

On the day of the case study visit, the IB DP coordinator gave the researcher a tour of Green Acres School. The approach to the school is through the gate of a picket fence lined with flowers. A short greenery-lined path leads to a large two-storey building with some stained-glass windows, forming the school's façade. This main building houses the school's offices and administration and other rooms and halls such as the dining hall and a large music room from which emanated the sounds of students rehearsing. Behind this imposing older building sit a number of standard classrooms. On the edges of the school in different directions are the boarding students' residences, the library, tennis courts and a sports field, and a picturesque view of fields beyond the school's perimeter.



The researcher shared morning tea with the IB DP coordinator and other teachers in the staffroom and lunched with the IB DP coordinator in the school's dining hall. These were informal conversations and the researcher later wrote down notes as to her observations and impressions of the culture of the school.

Despite the busy teaching schedules of the curriculum leaders, the researcher carried out individual interviews with each of the four curriculum leaders in the areas of Mathematics, Science,



English and History. These individual interviews took place in a meeting room within Green Acre School's library and varied between 20-50 minutes in length. Each interview was audio-recorded (with the curriculum leaders' consent) and later transcribed. The researcher had provided the curriculum leaders with the interview schedule ahead of time and each of the leaders interviewed had given considerable thought to the questions.

When not in the interviews, the researcher roamed around the grounds of Green Acres School, taking photographs and gaining an impression of the school. Walking around the school, the researcher noted a sense of calm and quiet studiousness. There was a homeliness and a lack of pretension to the physical surrounds and interactions observed in the school. From the picket fences demarcating the school's perimeter, to the several wall displays containing photographs of students and teachers, to the friendliness and openness of everyone this researcher met, the school felt a comfortable place to be. Indeed, Green Acres School is home to the international boarding students who live on campus.

In addition to the homeliness of the school's grounds and atmosphere, walking around the school left two further impressions on the researcher. The two photographs (one above and one below) relate to these impressions to some extent. A large sculpture of a hand making the sign for peace was on display at the back of one of the portable classrooms (see photograph above). This peace sculpture was situated in a place where students and staff may walk past on their way to and from daily classes; it was not merely a display for visitors but rather a permanent fixture that staff and students could see on a regular basis. This suggested a physical enactment of part of the IB Mission Statement, specifically that '[t]he International Baccalaureate aims to develop...caring young people who help to create a better and more peaceful world through intercultural understanding and respect'.

The second photograph shows a sign at one of the entry points to the boarding students' residence. It reads: 'Only the Boarding Students living in this house may enter. ALL VISITORS PLEASE REPORT TO THE BOARDING OFFICE'. The researcher gained an impression that there was some separation between the international boarders and the local day students. For example, the boarders tend to lunch together because – as one of the teachers explained – the boarders are provided with lunch in the school dining hall as part of their school fees. In these ways, the structures and policies reinforced that there are two identifiably different kinds of students at the school; day students (mostly local) and boarding students (mostly, if not all, international).



### Story of the IB DP at Green Acres School

Green Acres School has had the IB DP in place since the time the school was established in the 1980s and, one teacher commented, the IB DP was 'actively' chosen by the school's founders because it was considered to be 'the best one' among international programs. The IB DP appears to be a good fit for the school for reasons relating to a valuing of internationalism and the ethos of the IB Mission Statement that there is a need to develop learners 'who understand that other people, with their differences, can also be right'.

One of the teachers described the community of the farming town in which the school is situated as 'quite inward looking'. The IB DP at Green Acres School attracts international students who 'fly in to the country specifically to be students at [the] school'. These international students are understood to bring with them different cultures and perspectives which is thought to be 'good for the town' in terms of developing connections to the world beyond the small farming community.

The intermingling of local and international students is understood to work together with the IB DP curriculum to encourage development of a global perspective in the students. Specifically, teachers identified the core subject Theory of Knowledge as 'requiring [students] to investigate an issue out there in the big wide world'.

The IB DP coordinator reported that many of the students aspire to do degrees in medicine, veterinary Science and business. The careers section of Green Acre School's library was quite extensive and included the prospectuses of English speaking universities across the world. The students at the school do not limit themselves to applying to Australian universities. One way the IB DP is understood by teachers at Green Acres School to complement the academic aspirations of its students is through the Extended Essay which can be useful in applications for certain universities, such as Cambridge, to show evidence of a passion for an area of study. One teacher commented:

...in recent times when students are looking beyond year 12 to go for formal interviews for spots at university or to apply for a particular course in university too, it is going to work in their favour if they choose to do a particular essay based in a particular area of interest.

The Extended Essay, as well as the Theory of Knowledge essay, was also noted as particularly relevant to Green Acre School's international student cohort in that these learning/assessment tasks provided the flexibility and scope for international students to research and write on a topic related to the culture and History of their country of origin. Speaking of students who write their Extended Essay in the discipline of History, one teacher commented:

Often there's something they're passionate about. If they're international students it's often something to do with



their own History that might not be covered in the course. We've got an Indonesian boy this year. He's looking at how the Japanese occupation helped or hindered Indonesia's move towards independence, for example. Another Cambodian boy, a couple of years ago, did one on Pol Pot. So I think that's often interesting for international kids.

Overall, the Melbourne Declaration and the IB Mission Statement (together with the IB DP learner profile) were viewed by the IB DP coordinator and one of the senior school coordinators as having much in common and aligning very well. When asked about the extent of this alignment, the IB DP coordinator replied:

I think the Melbourne Declaration, it reads very much the democratic and equitable and just society, those are the words that are used in the IB Mission Statement already and culturally diverse and that...international mindedness and respect for other cultures is built into it because a lot of our teaching is about taking views from different sites and fences, so yeah, very much indeed.

The Australian Curriculum's focus on national citizenship and Asia, and Australia's engagement with Asia was described by a couple of the teachers at Green Acres School as somewhat limiting when compared to the international mindedness and global citizenship outlined in the IB DP learner profile and carried throughout the curriculum. One teacher explained the perspective taught through the IB DP curriculum and enacted at the school as follows:

Anything you did wouldn't just be from Australia's point of view...we are in Asia, we don't have to engage with it, we are in it, and so we are part of something, we don't have to think about engaging. We would be looking more at the similarities and differences and lots of knowledge within Asia. You know, probably wouldn't have quite the separatist view that sounds like.

Another teacher, commenting on the commitment to national values highlighted in the Melbourne Declaration, suggested this document could be critiqued for its national focus through an internationalist lens:

You know, looking at this document, I am thinking as a teaching tool that the Melbourne Declaration would be quite interesting to discuss in an IB setting where you're looking at the world and all the national ideas as well.

Further, a different teacher provided the example that the subject of economics provided the flexibility and scope for teaching students about aspects of the Asia-Australia relation:

One of the subjects we teach here...is economics and that can be trade and how countries do trade...what comes into play is to look at this from a realistic point of view and what does Australia trade and who do we trade with and how would that impact upon other societies. So although it's not written down within the curriculum as such, there is scope there which allows us to take the teaching...to tap into specific countries...

These citations demonstrate the acknowledgement among the teachers interviewed that the Asia-Australia relationship is incorporated into the teaching of IB DP subjects at the school as relevant to their context and to the significant number of international students from Asian countries who attend the school.

### The IB DP Curriculum at Green Acres School

The teachers interviewed at Green Acres School had either been teaching the IB DP since the beginning of their teaching career or had moved a number of years ago from teaching the state curriculum in another school to teaching the IB DP at Green Acres School. Given this, the teachers interviewed described feeling they had limited up-to-date knowledge of the state curriculum and the Australian Curriculum. However, they compared the IB DP favorably against the state curriculum and identified the IB DP as exceeding the state curriculum in a number of areas including most notably in the areas of independent learning, research skills, critical thinking, and bilingualism.

The Extended Essay was highlighted repeatedly in the interviews with the teachers at Green Acres School as an aspect of the IB DP curriculum that requires independent learning and independent thinking, and prepares students for university. The IB DP Coordinator described the skills learnt through completing the Extended Essay as a passport to higher education on a global scale:

Oh look the skills they learn through doing the extended essay you cannot put a number on. They go into Uni knowing how to reference and how to research and really, if you've got those skills, you can go anywhere.

During the case study visit, the researcher was fortunate to observe a student conferencing with her supervising teacher about the research she was in the process of doing towards her Extended Essay in the discipline of Science. The student brought a cage filled with mice to the supervising teacher and explained how she was providing each of the mice with a different diet and was observing and measuring the effect on the growth and behaviour of the mice. The supervising teacher encouraged the student and queried an aspect

of the experiment. Independent thinking and learning were clearly being enacted during this supervisory meeting and in regard to the student's Extended Essay in general.

Bilingualism was described by teachers interviewed as a highlight of the IB DP curriculum as enacted at Green Acres School. A large number of Language B subjects are offered at the school. This was cited by one of the teachers as contributing to the strength of internationalism at the school. The capacity to offer many Language B subjects is understood as particularly important to the international student cohort at the school in that these students can maintain their mother tongue whilst also learning English to a high level in preparation for study at English speaking universities. The capacity for a student to choose which language they study as Language A and which they study as Language B (i.e. English or their mother tongue), based on their needs and individual strengths, was highlighted as a way the IB DP exceeds the Australian Curriculum.





In comparing the IB DP and the state curriculum, the teachers largely viewed the IB DP as having greater breadth and depth of content and higher achievement standards. One teacher, commenting on the discipline of Science, identified the Standard Level subjects of the IB DP as exceeding the state curriculum equivalent subjects in terms of knowledge and skills developed:

The IB DP subjects can be taken as a Standard Level and a Higher Level. So even the Standard Level from my experience of teaching [the state curriculum] are beyond what a VCE sort of knowledge is. They incorporate more topics. Because we do two years, it's over two years, it's not broken up...it allows us to cover each topic in enough depth that we cover more skills.

Further to this, a couple of teachers interviewed stated a concern that the rigour, breadth and depth of the IB DP is not sufficiently understood or recognised by the state's universities. One teacher commented on a need to:

...open up some understanding at university level about what's actually involved in the IB DP...in relation to [the state senior school curriculum] would give people a greater understanding of what the kids actually do.

Whilst the strengths of the IB DP content were emphasised by the teachers at Green Acres School, potential issues with the great breadth and depth of content were also mentioned. One teacher identified the 'massive amount of content to cover' in the IB DP curriculum in comparison to the state curriculum as both a strength of the IB DP and a potential issue for less experienced teachers. This teacher stated:

...maybe sometimes on the downside with the IB DP there's so much curriculum to get through that...it takes a while before you've got the dexterity to build in more engaging activities. Sometimes your early tendency is to...you know, you're intimidated by the amount of volume you have to get through so you can slog it out too much through textbooks and so forth just because you're worried about getting through all the curriculum. But that's probably something more coming from experience, you learn to build that activity in.

Teachers identified the IB DP as superior to the state curriculum in terms of requiring the students to take their learning to a higher level. One teacher explained her preference for the IB DP English subjects over the state curriculum English subjects as follows:

I would definitely prefer to teach the IB DP subjects and that's because I find that they are far more broad and they also demand excellence of students. And having come from the government sector where I felt that I was really only teaching students up to a level where they were gaining an understanding of language but that was it. They were never really inspired or invited or expected...to push themselves beyond that and become excellent in language; become excellent communicators, in persuasion, not just functioning. And that's why I really do appreciate what the IB DP English does.

There was general agreement among the Green Acres School teachers interviewed that the IB DP prepares students for university more thoroughly than the state curriculum. More highly developed analytical skills and critical thinking skills were identified as outcomes of the IB DP. For example, one curriculum leader, in describing what her students feed back to her when they move on from the IB DP to university study, stated:

They'll be able to analyse...and be far more critical. And that's a skill I think that thinkers should develop and so students do recognise that that's what the IB has given them. They didn't realise it at the time. They thought they were just jumping through hoops but by the end of it they realise that they're far more intelligent. It's not just about reading. It's about being intelligent and so I think that's the all-round benefit of the IB DP.

The inquiry based learning, along with the report and essay writing skills taught in the IB DP, whilst demanding a lot of IB DP teachers and students, were described by teachers as preparing students for Bachelor degree study. For example, one teacher, commenting in relation to the Science curriculum, stated:

I think it is a valuable thing, especially to write up those investigations in a sort of formal mathematical report, is good training for the kids if they do want to tackle academic life at university. So they're being exposed to report writing and inquiry based learning that does become a part of, you know, higher academic skills.

The teachers at Green Acres School highlight the IB DP curriculum as an appropriate fit for their local and international student cohorts, and their insights offer another layer to the research, drawing attention to many elements of the IB DP curriculum in practice within their school.



## Lavender Hill School

### Background

Lavender Hill is a government co-educational high school in one of Australia's capital cities. Established in the CBD in the late 1800s it was created as a pathway into mining, featuring engineering and technology based subjects. In the 1960s the school moved to its current site, in the suburb of Lavender Hill, about 10 km from the CBD.

By the 1980s Lavender Hill had dropped down to 400 students and was at risk of closure. At that stage the school was rebadged by the state government as an international school. DP coordinator Lawrie explained that at that time, 'international school' simply meant a 'focus on internationalism' but the concept of internationalism has now been well and truly incorporated into the school values and mission statement, and the introduction of the DP in the 1980s meant that international curriculum has been featured now for over two decades.

Today Lavender Hill is a thriving school with 1500 students and is highly sought after by many families. 60% of students have a non-English speaking background (NESB), ranging from some recently arrived with low level English, to a significant number who have been in Australia since early in life, with high proficiency in English. Lawrie describes many of the families as migrants with high aspirations, and high values for education, who back the school completely, and push the kids to do really well. 'We have a lot of students like that', he explains, 'so that makes the environment very good'. There are nearly 100 full fee paying international students enrolled. Many of these NESB and international students are of East Asian background with Chinese students being the biggest group.

Lawrie describes the school as 'highly desired' by students and parents, with a third of the intake each year being select entry into the school's 'Shine' program for gifted students. The remaining two thirds are local students from the neighbourhood or students from outside the neighbourhood who are eligible for entry through having a sibling in the Shine program, or who through taking the DP. Demand for Lavender Hill School is high and Lawrie compares it with other well-known select entry government schools in other Australian cities. About 80% of Lavender Hill students are looking for a University pathway and a prestigious university in the city is one of the main destinations for students, as well as the more prestigious universities in other Australian cities, and even internationally for a few students.

The suburb of Lavender Hill is well-established and affluent, with tree-lined quiet streets surrounding the school and mostly single-storey, well-manicured weatherboard and brick houses. Real estate agents comment that Lavender Hill School inflates the property market in the area because of its desirability to families and



house prices are above the median range for the city. So high is the demand for this school that families have been known to rent in the area for a six month period in the hope of achieving entry for their child. Lawrie explains that many aspirational migrant families use their social networks to work out where to live when they arrive in Australia, in order to secure enrolment for their children at Lavender Hill School.

### Visit to Lavender Hill School

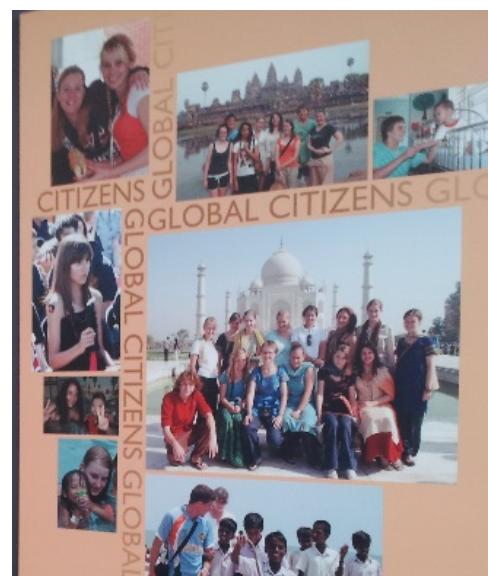
One of the researchers visited Lavender Hill in December 2013, the week school was finishing for the year. She spent a morning at the school, during which time she conducted a lengthy interview with the IB DP coordinator, Lawrie, who has been teaching at Lavender Hill since 1998 when the school only had 800 students. Following this, a shorter group interview was conducted with the DP Maths and Environmental Science teachers, David and Patrick. The DP English coordinator could not be interviewed as he was absent that day.

Following these interviews the researcher was taken on a tour of the school by Lawrie during which time she took photos of student displays, capital works underway, and key areas such as student administration and public entrances to the school.



The researcher's first impression upon entering this school was that this was a vibrant, colorful environment with a clear focus on internationalisation, and also that this was clearly a school that is growing, as capital works were underway at the time with a large two storey new building, pictured, still surrounded by scaffolding one of the more prominent visual features from outside the school fence. Many glossy displays and mounted posters in the public entrance areas depicted students undertaking global or international travel and social service.

The visual impressions of internationalisation were enhanced further for the researcher upon walking around the school corridors and observing various entrances and student administration areas. In two separate places in the school a large world map was prominently displayed with clear markings on the various countries from which students of the school were born. This map was extremely large and prominent, taking up significant wall space and very difficult not to see upon entering the school. Flags of all the marked countries were displayed above these maps, as pictured below.







The researcher was fascinated by one particular corridor in the school containing a series of notice boards for clubs established by Lavender Hill students, as seen in the images pictured on the following page. These clubs were related to organisations such as Amnesty International and issues such as the environment, feminism, and a gay-straight alliance. These notice boards were prominently displayed and visually striking, suggesting a culture within the school oriented toward exploring social justice and diversity issues in the local and global communities. This suggests a physical enactment of the Melbourne Declaration's emphasis on 'active and informed citizens' and the goals within the IB learner profile of striving to be 'principled, open-minded and caring'.



### The story of the IB DP at Lavender Hill

The DP was introduced at Lavender Hills in the 1980s and it is one of only several government schools in Australia that offer the DP. It was introduced to compliment the focus on internationalisation at the school that had started in the 1980s. The school also has the 'Shine' program, which is a select entry stream of students, constituting about a third of the initial intake of students each year. Lawrie explained that the number of students choosing the DP over the State Certificate (SC) each year is growing steadily:

This year 2013 we've had 50 Diploma students, and say 250 doing the state certificate. Next year we'll have 75 Diploma students and 225. And next year in year 11...beginning year 11, we'll have 100 Diploma students starting. And say 200 in the state certificate...the proportion of Diploma

students is growing. So even five years ago we had 35 out of 250, now we've got 75 out of 300. So it is definitely growing and we're the biggest Diploma school in this city.

The presence of the DP at Lavender Hill clearly operates as an attractive draw card for the many aspirational families that desire to enroll their children at Lavender Hill School. Lawrie explains that:

We probably run six or seven school tours a year and most of the people that come to those school tours are unfortunately outside of the zone or they're interested in the IB and the Shine program and wondering how they can get into our school. We probably over the course of the year have a thousand visitors to the school who go on a tour and the majority of them won't get in.

When asked how the two programs (DP and State Certificate) are presented to students, Lawrie emphasised that the school presents them to students as equal in value. Yet he then goes on to explain his belief that the DP is a more academically demanding program:

We acknowledge that the Diploma is academically more challenging and that the workload is significantly heavier. We say the value of that is...it's many things. It's the international focus. It is the multidisciplinary focus...

With the IB DP you can tailor it to some extent to your strengths but you have to deal with your weaknesses, and you have to do a lot of work. With the state curriculum you can focus on your strength and avoid your weaknesses...So the below average ability students can find a State program but the below average ability student can't find a Diploma Programme. So that's one reason why the Diploma is seen as being elite so I'd be okay with elite but I wouldn't be okay with elitist. I'm not okay with that.

Lawrie mentions that in his State Certificate History class there would be more likely to be students who are struggling academically than in his DP History class:

In my SC class I get more of the struggling students so I get some of the very top level students and I don't get very many struggling students in the IB DP but we do get that in the SC, and that's obviously a challenge and a different challenge...that is the point of difference.

David, the DP Mathematics teacher, also suggested that many of the students develop an idea that the DP is for 'smart' students who have gone through the school's Shine program, despite the school trying to avoid presenting it in this way:

Some students will say 'oh IB DP is for the Shine kids and SC is for the local students'. They do know the further up the year levels they go that it's for everyone. The IB is for everyone, it's not just for the Shine students and a lot of the Shine students also do SC.

When asked specifically about this, Lawrie estimates that about 50% of the DP students have come through the Shine program.

Patrick, the DP environmental Science teacher, echoes many of Lawrie's thoughts about the different academic standards and levels in the two programs. When asked about whether he has a preference for teaching either the DP or the SC, he stated:

I find that hard to say because obviously the IB DP is selected by students here so on the whole they're aware of the extra demand, you know doing six subjects instead of four for a start. So you've got a selective group. I think it's a curriculum that's probably a little bit more up to date and in the areas that I teach, I feel that I'm doing all sorts of things that a contemporary environmental Science course would do at University, and even in geography. I think it would be more of a struggle if the students...if every kid here had to do IB DP like they do some of the schools in Singapore for example. I think it would be a different kettle of fish then. I think the SC allows a much wider range of abilities so there are things you can do to get really disinterested students over the line, maybe get them to a B so that they can get to University and then reinvent themselves.

All of these reflections from Lawrie, and also from Patrick, about the kinds of students who take up the DP at Lavender Hill, suggest that the IB DP at Lavender Hill showcases and highlights what is already a school culture known for high levels of academic achievement, post-school pathways into elite universities.

### The IB DP and the State Curriculum at Lavender Hill

DP teachers at Lavender Hill unanimously expressed the view that the DP demands a higher standard of achievement from students than the State Curriculum (SC). The environmental Science IB DP teacher, Patrick, told the researcher that:

The impression I get particularly amongst the physics and chemistry people is that basically the SC goes so far and IB DP sort of goes beyond it. I mean I wouldn't be surprised at the outcome of your mapping and also based on what we've done in year 8 to 10 where ACARA seems to cover the minimum amount, you might find that IB DP goes...ticks all the bases and goes beyond it I think. I could almost guess that'll be the outcome.

In relation to maths and Sciences, David implies that the DP goes to a higher level than the SC, saying that:

David: It tends to be academically orientated so in the Sciences of course physics, chemistry and biology, particularly higher level, are similar to the maths. I don't know whether it's still the situation but if you get a 6 or a 7 with higher level for the maths, the physics, or the chemistry then City Uni [prestigious university in the city] for instance gives you first year and you can go...

Lawrie: ...passing.

Patrick: Yeah, because it goes well beyond what year 12 is.

While these comments by David and Patrick don't offer specific examples of how the curriculum or assessment may be of a higher standard in the DP, more specific examples are given by Lawrie in relation to both the structure of the programs and the nature of the assessment. Lawrie explains that the differences in structure between the DP and the SC means that DP students study more subjects in total and that their final score reflects the full two years of the DP, compared with the SC for which the final score really only reflects assessment completed in the final year. The DP has six subjects that are all two year sequences, whereas the SC only has five subjects, including one which is an independent research unit. Lawrie explains that in the SC 'they're only assessed on what they do in year 12. The IB DP kids are assessed on what they do over the two years. So they do 13 exams and that's huge workload for them'.

In addition to the structure of the program, the teachers comment on the nature of the assessment and generally agree that the assessment in the DP is harder, but that the expectations are more clearly explained in the curriculum. Lawrie stated that:

The conversion [into ATAR] is becoming less generous for the DP students and I don't think that's fair cause the DP students do six subjects, Theory of Knowledge, Extended Essay. State students do a research project which is not equal to the extended essay. I'd say the extended essay is harder. So DP students do a lot more work and the work they do is a lot harder. They get a high ATAR and they earn it. They sweat blood. And their teachers sweat blood.

The SC is also very much driven by continuous assessment. The exam component is less now but I think that the continuous assessment is very stressful for students because every week in one of their classes they've got to produce something that's high stakes and I think they find that very stressful and some don't deal with that very well and it's fairly easy to get behind and if you get behind then that's another stress that 17 year olds often find, it's really hard to catch up and to dig out of it so continuous assessment has its pluses and minuses and I think that the SC has swung heavily towards continuous assessment.

In addition to their general thoughts about how the DP compares with the SC in terms of achievement standards, the teachers were also asked about the content of the subjects they taught. They were asked similar questions to those contained in the surveys that a number of schools returned. These questions emerged from the curriculum mapping done by the expert panels and they pointed to particular areas where it was found that the IB DP may contain a gap in alignment in relation to the Australian Curriculum in a particular area.

As the DP History teacher, Lawrie was asked about the Route 2 DP History course at Lavender Hill and any specific ways in which it might look at Asia and Australia's relationship with Asia. He explained that:

We do History Route 2 peacemaking and peacekeeping, Asia and Oceania. I think that's the full description of the options that we take, so what we study is two themes...two big themes, which is causes, practices, and effects, of war. One is authoritarian in single-party states, so they're our standard level options.

East Asia and Oceania is a depth study, so in the depth study we look at China. We study China heavily, and Japan, and we've chosen that because that's where a lot of our students come from culturally, and also Australia that's our region...we deliberately chose that way back...way back, years ago because we're an international school, we've got a large proportion of students with Asian heritage. It's our region. How could we not?

So when we're looking at modern China in the emergence of modern China up to 2000 trade is obviously one of the things we talk about and the opening of China so we do discuss that [Australia's relationship] but it's probably peripheral and incidental.

I always tell the kids that when I was a boy at a school not much smaller than this one in this city there were no Chinese students. I never met a Chinese student. Why? Because China was closed. And now China is completely open, and we've got Chinese nationals in the class and I've also got in my

class this year Taiwanese nationals so that's really interesting. The Taiwanese girl, her dad is a PhD in History and a History lecturer, so he's via his daughter, keeping me on my toes because some of the resources that we have used over a long time really are probably coming out of...they're not communist but they reflect the communist view of History to an extent and they really bag the Nationalist Party, so it's really fascinating, it's really good to have those people in my class.

These insights from Lawrie show that school context is vital in determining the extent to which the DP allows for students to learn the content of the new Australian Curriculum in the different subject areas. Lawrie, along with many other teachers interviewed, explains that the History of Asia and Oceania option is chosen deliberately because of the region in which Australia is located, and because many students in their classrooms and schools come from a variety of countries in the region. Such detail about how the DP at Lavender Hill in responding to Australia's location in the Asia Pacific would simply not have been known had this study been limited to mapping of curriculum documents.

When asked whether DP maths caters for a range of different abilities, David explains that the key difference between the two programs when it comes to maths is that in the DP students have to achieve at least 'middle level maths' whereas in the SC they can avoid maths altogether if they wish to:

At the very top level in high level maths they're doing some of first year Uni equivalent maths and then the one that I teach, the IB maths studies, is probably somewhere between easy maths and say math applications and math methods, so you know it does cater for the full range of abilities but it wouldn't suit every year 12 student. If they did SC and they didn't want to do maths in year 12, they'd be allowed, that's fine, you don't have to. Whereas in the DP unit you have to get at least this middle level of maths. I would say the middle level of maths, it's not a low level of maths. The kids tell me it's not easy maths.

When asked about inquiry learning in DP maths and Sciences, David and Patrick offer the following comparisons:

Patrick: ...essentially IB DP inquiry stuff would probably be around practical work and then everything else is tested at the exam. Whereas the SC has a mixed folio of work. So you've got some pracs, you've got some reports, and you've got some full tests, which I think would be right for maths wouldn't it...

David:...yeah in SC in the senior school in maths we do two folio tasks which are usually called direct investigations or projects but now they just call them folio tasks so they're more or less projects so they're inquiry based. You know, the teacher sets a context something to investigate so the students go away and investigate it and then they do a write up, with an introduction that talks about what they're doing and the purpose of it. Talk about a method they used.

In the IB DP in maths studies we do a project which is very similar to that but it's a project of their own choice. Each individual student has to have their own individual project and what they're expected to be able to do is to take the Mathematics they've learnt over the previous 18 months and put it together into some sort of self-generated idea.

*Interviewer: So that's quite different then in the sense that it's much more...*

David:...yeah, it's not teacher directed and the projects that the students will come up with span a whole lot of different areas and the teacher is allowed to read one draft in the IB and provide some feedback about, I think you need to address this area or you haven't quite met the criteria here, but they can't give specific information about what to do and support like that. Whereas I think in the SC you tend to get a bit more support than that.

David then makes a direct link between this inquiry method in DP maths and the IB DP learner profile, which includes 'Inquirers' as its first item. Overall, the comments made by both Patrick and David indicate that the level of independent inquiry is higher in the DP compared with the SC in the maths and Sciences.

The explorations of the DP and the State Curriculum in practice has been offered up here through the lenses of educators embedded in the programs at Lavender Hills and these insights have offered invaluable data to the richness of the study. In the following section we highlight the important findings drawn from these case studies, drawing on them collectively to offer an overall picture of the DP curriculum in relation to the SC *in practice*.

### Case Studies: Important Findings

The teachers of these schools spoke with genuine enthusiasm about the IB DP curriculum as an appropriate fit for their local and international student cohorts, specifically around issues of inculcating a global perspective; in stretching the students to achieve at a higher standard than the state curriculum allows; and in requiring them to develop the knowledge and skills needed for university studies and for lifelong learning.

In terms of thinking about whether the IB DP allows students to become successful learners, confident and creative individuals, and active and informed citizens looking at it in context provides significant insights around how its location in particular school cultures make this possible. When the DP is selected by high achieving students in a school culture that is already driven toward academic success and University pathways, as at Lavender Hill, then it's not hard to see how the DP, in this school context, is allowing its students to become 'successful learners' as defined in the Melbourne Declaration. The many notice boards and displays observed and photographed in the entrance areas and corridors of Lavender Hills suggest a strong culture of internationalisation and of interest in social justice issues in local and global settings, while the peace statue at Green Acres School demonstrates an emphasis on intercultural understanding and respect. The presence of these symbolic features offers further insights into how schools with the IB DP are assisting students to become 'active and informed citizens' (MCEETYA, 2008).

Despite the apparent inaccuracy of the students' idea that 'the IB is for Shine students and the SC is for local students', there is no doubt that the students who select the IB DP at Lavender Hills are students who are academic high achievers. It was noted that all students who select the IB DP at Lavender Hills are high achieving students on a University Pathway and that, as Lawrie states, 'I think that they're really looking for high ATARs'. Thus the take up of the IB DP here seems to be related to the aspirational aspect of the Lavender Hill School that Lawrie describes. In this sense, the take up of the IB DP reflects the schools' reputations and cultures as highly sought after schools that will get most of their students in to prestigious University pathways. As emphasised by respective staff at Lavender Hill, 'I don't get very many struggling students in the IB DP' and, 'I think the SC allows a much wider range of abilities'.



Evidenced through these case studies, the IB DP clearly enables students to become successful learners, because of the way the characteristics in the learner profile trickle through into the curriculum. As suggested in one example, students wouldn't be able to do the particular tasks in the DP Mathematics curriculum without engaging with certain characteristics in the learner profile such as reflection and communication. Many of these characteristics, gathered around inquiry learning, are aligned with the way 'successful learning' is defined in the Melbourne Declaration.

In terms of assessing whether and how the IB DP aligns with various aspects of the Melbourne Declaration and the Australian Curriculum, context is vital. Knowing aspects of a school context, and a school culture, and the kinds of students selecting the DP, means deeper insights can be found into how the DP is preparing Australian students to become 'successful learners, confident and creative individuals, and active and informed citizens'.

The researchers wish to sincerely thank the teachers at Green Acres School and Lavender Hill School for their great generosity in hosting the researchers on the days of the case study visits, giving their time and sharing their reflections about the enactment of the IB DP in their specific school contexts.

## CONCLUDING STATEMENTS

This report has outlined the nature of alignment between the IB DP and the Australian Curriculum (AC) at senior secondary level. This has been done in order to establish the extent to which the IB DP is consistent with the educational goals and requirements established by MCEETYA and ACARA, including areas where the IB DP fails to meet or surpasses such goals and requirements.

A robust mapping of relevant curriculum documents related to the overarching aims of both the IB DP and the AC, as well as the four discipline areas of Mathematics, Science, English and History was undertaken by expert panels led by members of the project team. This mapping was supported by snapshots of the lived experience of IB DP curriculum through qualitative data from educators in IB DP schools. Qualitative data included telephone interviews with IB DP coordinators in 29 Australian schools, online surveys returned by discipline coordinators (Mathematics, Science, English and History) in 16 IB DP schools, and case study visits to two IB DP schools by the researchers. The research design has built on Porter's (2002) model for curriculum mapping, and added significantly to this model by including multiple layers to the mapping process, including attention to the *intended* curriculum through use of key documents, as well as the *enacted* curriculum through capturing snapshots of IB DP curriculum in practice through qualitative data. This project has therefore made a substantial contribution to developing methodological approaches to curriculum mapping.

As elaborated in the various chapters of this report, key results emerging from the analysis indicate that the national focus of the 'Melbourne Declaration on Educational Goals for Young Australians' contrasts with the global focus in the IB DP. In some ways the IB DP surpasses the goals set out in the Melbourne Declaration because of its global focus. Yet due to this distinction, there were also areas where there was a *possibility* for the IB DP to fall short of alignment with the AC. This did not, however, extend to the enacted curriculum in Australian schools.

The core IB DP units 'Theory of Knowledge' (TOK), 'Creativity, Action and Service' (CAS) and 'Extended Essay' (EE) were found to be key features of the IB DP which assist with alignment with the Melbourne Declaration and also the three dimensions outlined in the Shape of the Australian Curriculum: discipline-based learning, general capabilities and cross-curriculum priorities. In some ways the IB DP was found to surpass the AC with respect to problem solving and inquiry-based learning. This was further supported through the qualitative data collected through interviews with IB DP teachers.

DP students are required to undertake a Mathematics subject, which is not the case for a senior student in the AC. A student undertaking the AC Mathematics offerings of mathematical methods and specialist Mathematics will undertake significantly less depth of Mathematics than what is offered in the DP subjects. A common view put forward by DP Mathematics teachers in interviews was that the greater emphasis on external assessment in the DP leads to better preparation for tertiary studies, and that the Higher Level subjects exceed the standard of achievement required in the various state curriculum certificates.

DP students are required to undertake a Science subject, which is not the case for a senior student in the AC. The DP chemistry course surpasses the AC equivalent in terms of real world applications, a view that was supported by DP chemistry teachers. 'Environmental systems and societies' in the DP, however, is only offered at SL and does not cover all content available in the AC equivalent subjects. DP Science has a greater



emphasis on external assessment, yet DP Science coordinators expressed a view, in interviews, that the requirements of the internal assessment was driving high level experimental skills.

In the Group 1 English subjects in the DP the global dimension and commitment to internationalisation, intercultural understanding and inclusion is evident. For example in parts 3 and 4 of the Language and Literature A syllabus, the study of works in translation and the investigation of context highlight the ways in which meaning can change across cultural boundaries. This aligns well with the emphasis in the AC on 'critical literacy' and the role of the contexts of a text in determining and shifting its meaning. No alignment was found in the AC with the DP Literature and Performance syllabus and this may be one area where the DP surpasses what is offered in the AC in relation to senior English.

The DP History and the AC senior History courses are comparable when it comes to learning outcomes around historical skills, but the DP course surpasses the AC with regard to particular academic skill development, such as constructing a written argument under exam conditions. The DP History courses do not include any attention to Ancient Civilisations, but the Route 2 course covers most of the content being offered in the AC modern History course. The DP History courses particularly contribute to DP alignment with the AC general capabilities of 'intercultural understanding' and 'critical and creative thinking' and also with the cross curriculum priority of 'Asia and Australia's engagement with Asia'.

The IB DP meets the specifications for 'Senior Secondary Certificate of Education' outlined in the Australian Qualifications Framework and it contributes in some ways to the specifications for Level 7 Bachelor Degree

Information about the enacted curriculum in particular school contexts can provide deeper insights into the extent to which the IB DP is consistent with the educational goals and requirements established by MCEETYA and ACARA, including areas where the IB DP fails to meet or surpasses such goals and requirements. Qualitative data has provided important insights into how the enactment of the IB DP in Australian schools is done in ways that engage with the national and regional context. This was most clearly illuminated through the two case study visits. Thus areas that were found to be gaps at the document mapping stage were usually found to be restored at the level of enactment in schools.

## Recommendations

The Australian Curriculum is yet to be implemented across the states, and thus the comments about alignment made by teachers referred to the state certificates in senior secondary level that were in operation at the time of the research. Future research may need to consider the enacted curriculum in practice once the Australian Curriculum is operating in all Australian states. This is particularly important with respect to achievement standards. A number of teachers commented on the clarity of the IB DP assessment objectives in comparison with the state certificates, suggesting that it may be easier for students to achieve a 7 in an IB DP subject than an A plus in the requisite subject in the state certificate. Future research might usefully revisit the question of alignment between the standards of achievement set out in the AC with those in the IB DP.

## APPENDIX 1

List of schools who participated in the IB DP coordinator (telephone) interviews

| State | School                             | Address                                       |
|-------|------------------------------------|---|
| ACT   | Canberra Girls Grammar School      | Melbourne Avenue, Deakin 2600                 |
|       | Melba Copland Secondary College    | Copland Drive, Melba 2615                     |
|       | Narrabundah College                | Jerrabomberra Avenue, Kingston 2604           |
|       | The Canberra College               | Woden Campus, Launceston Avenue, Phillip 2606 |
| NSW   | Elonera Montessori School          | 21 Mount Ousley Road, Wollongong 2519         |
|       | German International School Sydney | 33 Myoora Road, Terrey Hills 2084             |
|       | Kambala                            | 794 New South Head Road, Rose Bay 2029        |
|       | Monte Sant' Angelo Mercy College   | 128 Miller St, North Sydney 2059              |
|       | Penrith Anglican College           | 338-356 Wentworth Rd, Orchard Hills 2748      |
|       | SCECGS Redlands                    | 272 Military Road, Cremorne 2090              |
|       | St. Pauls Grammar School           | 52 Taylor Road, Cranebrook 2749               |

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|     |   |  |
|     | Trinity Grammar School - Sydney                         | 119 Prospect Rd, Summer Hill 2130          |
| QLD | Cairns State High School                                | Cnr Sheridan & Upward Streets, Cairns 4870 |
|     | Queensland Academy for Health Sciences                  | 102 Edmund Rice Drive, Southport 4215      |
|     | Queensland Academy – Science Mathematics and Technology | 78 Bywong Street, Toowong 4066             |
|     | Somerset College  | Somerset Drive, Mudgeeraba 4213            |
|     | Townsville Grammar School                               | 45 Paxton Street, North Ward 4810          |
| SA  | Glenunga International High School                      | L'Estrange Street, Glenunga 5064           |
|     | Mercedes College  | 540 Fullarton Road, Springfield 5062       |
|     | St. Peter's College                                     | Hackney Road, St. Peters 5069              |
|     | Walford Anglican School for Girls                       | 316 Unley Road, Hyde Park 5061             |
| VIC | Australian International Academy of Education           | 56 Bakers Road, Merlynston 3058            |
|     | Carey Baptist Grammar School                            | 349 Barkers Road, Kew 3101                 |
|     | Sophia Mundi Steiner School                             | 1 St. Heller's Street, Abbotsford 3067     |
|     | St. Leonard's College                                   | 163 South Road, Brighton East 3187         |
|     | The Kilmore International School                        | 40 White Street, Kilmore 3764              |
|     | Wesley College  | 577 St Kilda Road, Melbourne 3004          |

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|----|-----------------------|------------------------------------|
| WA |                       |                                    |
|    | The Montessori School | 18 Montessori Place, Kingsley 6065 |
|    | Treetops Montessori   | 12 Beenong Rd, Darlington 6070     |

## APPENDIX 2

### IB DP Coordinator (telephone) Interview Schedule

In this interview, we would like to seek your views on the overarching concepts, design and delivery of the IB DP and the extent to which these align with the AC. Key documents such as the IB DP documents, the Australian Qualifications Framework (AQF) and the Melbourne Declaration will be referred to in this interview.

1. Is your school offering both the IB Diploma Programme and Australian curriculum or IB DP only? What have been some of the *highlights* of this program set up at your school?
2. What is the underlying philosophy of the IB Diploma Programme? What are some of the distinguishing features of the IB Diploma Programme?
3. To what extent does the IB DP key *curriculum goals* align with the AC as outlined in the 'Melbourne Declaration on Educational Goals for Young Australians'?
4. How does the IB DP fulfill the *learning outcomes* of 'knowledge', 'skills' and 'application of knowledge and skills' established by the AQF for Senior Secondary level?
5. In general, how does the IB DP *curriculum design* align with the AC in the following ways: content standards; achievement standards; assessment?
6. Could you comment on how some of the following features are positioned in the IB DP in your school?
  - International partnerships
  - Bilingualism
  - TOK (Theory of knowledge)
  - EE (extended essay)
  - CAS (creativity, action and service)
  - Critical and creative thinking skills
  - Lifelong learning
  - Compassion for others
  - Global intercultural understanding
  - Inquiry-based teaching and learning
  - Independent learning
  - Individualised learning
  - Social and moral responsibility
7. Do you produce your own documents on the alignment processes between the IB DP and the AC? If yes, what are there some of the challenges involved?
8. The AC has a strong emphasis on the issues listed below. How are these addressed in the Diploma curriculum at your school?
  - National citizenship, knowledge of Australia's system of government
  - Aboriginal and Torres Strait Islander histories and cultures
  - Asia and Australia's engagement with Asia
  - Sustainability
9. Can you describe any exemplars of practice or documentation?

10. Do you have any questions for us about the research?

Further Questions:

We are hoping to interview curriculum leaders to better understand the alignment between IB DP and AC in the following curriculum areas. Would you be willing to provide us with the names and contact details of your curriculum leaders for us to conduct an interview/email survey with them?

- Mathematics
- Science
- English
- History

Would you be willing to be a case study school? Would it be possible for us to visit your school to gain a deeper understanding of the IB DP curriculum in practice?

THANK YOU

## APPENDIX 3

Mapping of correspondences between research questions and IB DP coordinator interviews

| Questions asked of IB DP coordinators in interviews  | Research Questions  |
|--|---|
| A - What have been some of the highlights of the IB Diploma Programme set up at your school?   |   |
| B - What is the underlying philosophy of the IB DP? What are some of the distinguishing features of the IB DP?   |   |
| C - To what extent do the IB DP key curriculum goals align with the AC as outlined in the 'Melbourne Declaration on Educational Goals for Young Australians'? (Interviewees were prompted with the breakdown of 'Goal 2' on pages 8-9 of The Melbourne Declaration.)   | 1 – To what extent does the IB DP curriculum align with the 'Melbourne Declaration on Educational Goals for Young Australians'?   |
| D – How does the IB DP fulfill the learning outcomes of 'knowledge', 'skills' and 'application of knowledge and skills' established by the AQF for Senior Secondary level?   | 4 – Are the standards, principles and practices of the IB DP consistent with AQF learning outcomes for the qualification type 'Senior Secondary Certificate of Education'?  |
| E – In general, how does the IB DP curriculum design align with the AC in the following ways?<br><br>Content standards; achievement standards; assessment.   | 2 – To what degree does the IB DP curriculum align with the principles and guidelines in the 'Shape of the Australian Curriculum v2 2010'?<br><br>3 – In what ways do the IB DP content standards align with the content standards described in Australian Curriculum documents?                      |
| F - Could you comment on how some of the following features are positioned in the IB DP in your school?<br><br>International partnerships; bilingualism; TOK; EE; CAS; critical and creative thinking skills; lifelong learning; compassion for others; global intercultural understanding; inquiry-based teaching and learning; | 1 – To what extent does the IB DP curriculum align with the 'Melbourne Declaration on Educational Goals for Young Australians'?<br><br>5 – Do the standards, principles and practices of the IB DP provide knowledge and skills that contribute to success at higher AQF levels, specifically Level 7 |

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| independent learning; individualised learning; social and moral responsibility.  | Bachelor Degree?   |
| <p>Research Question 6 was not specifically asked in interviews. However, many interviewees did make comments about this – particularly in relation to TOK and EE in Interview Question F above.</p> <p>There is a separate document which collates interview responses to Research Question 6 – called ‘ Q6- Knowledge &amp; skills for Level 7 Bachelor Degree’.</p> | 5 – Do the standards, principles and practices of the IB DP provide knowledge and skills that contribute to success at higher AQF levels, specifically Level 7 Bachelor Degree?  |
| G – Do you produce your own documents on the alignment process between the IB and the AC? If yes, what are some of the challenges involved?  | 2 – To what degree does the IB DP curriculum align with the principles and guidelines in the ‘Shape of the Australian Curriculum v2 2010’?   |
| <p>H – The AC has a strong emphasis on the issues listed below. How are these addressed in the diploma curriculum at your school?</p> <p>National citizenship, knowledge of Australia’s system of government</p> <p>Aboriginal and Torres Strait Islander histories and cultures</p> <p>Asia and Australia’s engagement with Asia</p> <p>Sustainability</p>            | <p>1 – To what extent does the IP DP curriculum align with the ‘Melbourne Declaration on Educational Goals for Young Australians’?</p> <p>2 – To what degree does the IB DP curriculum align with the principles and guidelines in the ‘Shape of the Australian Curriculum v2 2010’?</p> |



## APPENDIX 4

Schools participating in curriculum leader surveys

| State | School                                 | Address                                       |
|-------|--|---|
| ACT   | Narrabundah College                    | Jerrabomberra Avenue, Kingston 2604           |
|       | The Canberra College                   | Woden Campus, Launceston Avenue, Phillip 2606 |
| NSW   | Kambala                                | 794 New South Head Road, Rose Bay 2029        |
|       | Monte Sant' Angelo Mercy College       | 128 Miller St, North Sydney 2059              |
|       | Trinity Grammar School - Sydney        | 119 Prospect Rd, Summer Hill 2130             |
| QLD   | Queensland Academy for Health Sciences | 102 Edmund Rice Drive, Southport 4215         |
|       | Somerset College                       | Somerset Drive, Mudgeeraba 4213               |
|       | Townsville Grammar School              | 45 Paxton Street, North Ward 4810             |
| SA    | Glenunga International High School     | L'Estrange Street, Glenunga 5064              |
|       | Mercedes College                       | 540 Fullarton Road, Springfield 5062          |
|       | St. Peter's College                    | Hackney Road, St. Peters 5069                 |
| VIC   | Carey Baptist Grammar School           | 349 Barkers Road, Kew 3101                    |
|       | St. Leonard's College                  | 163 South Road, Brighton East 3187            |
|       | The Kilmore International School       | 40 White Street, Kilmore 3764                 |
|       | Wesley College                         | 577 St Kilda Road, Melbourne 3004             |
| WA    | Treetops Montessori                    | 12 Beenong Rd, Darlington 6070                |

## APPENDIX 5

### Curriculum leader survey schedules

- Survey for Mathematics curriculum leaders
- Survey for Science curriculum leaders
- Survey for English curriculum leaders
- Survey for History curriculum leaders

## SURVEY FOR MATHEMATICS CURRICULUM LEADERS

In this survey we wish to gain an understanding of your view of how the IB Diploma Programme Mathematics curriculum is enacted at your school and how it compares to the Australian/State Mathematics curriculum.

If you have some knowledge of the new Australian Curriculum for senior secondary level, please answer the survey questions in relation to this. If you are not yet familiar with the new Australian Curriculum, please reflect on your state/territory's curriculum in comparison to the IB Diploma Programme curriculum for Mathematics.

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| <p>If you had the choice, would you prefer to teach the Australian/State Curriculum or the IB DP at senior secondary level? Why?</p>   |
| <p>What do you like about teaching the IB Diploma Programme Mathematics subjects?</p>  |
| <p>To what extent do you think the IB DP Mathematics subjects as compared to the Australian/State Curriculum Mathematics subjects cater for all students' abilities and aspirations?</p>                           |
| <p>In what ways is inquiry based learning part of the Mathematics subjects in the IB DP as compared to the Australian/State Curriculum? Could you provide an example of inquiry based learning in Mathematics?</p> |
| <p>Comparing the outcomes from the Australian/State Curriculum students who study Mathematics and the IB DP students who study Mathematics, what differences between student learning outcomes are evident?</p>    |

Thank you very much for your participation.

## SURVEY FOR SCIENCE CURRICULUM LEADERS

In this survey we wish to gain an understanding of your view of how the IB Diploma Programme Science curriculum is enacted at your school and how it compares to the Australian/State Science curriculum.

If you have some knowledge of the new Australian Curriculum for senior secondary level, please answer the survey questions in relation to this. If you are not yet familiar with the new Australian Curriculum, please reflect on your state/territory's curriculum in comparison to the IB Diploma Programme curriculum for Science.

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| s   |
| What do you like about teaching the IB Diploma Programme Science subjects?  |
| To what extent do you think the IB DP Science subjects as compared to the Australian/State Curriculum Science subjects cater for all students' abilities and aspirations?                           |
| In what ways is inquiry based learning part of the Science subjects in the IB DP as compared to the Australian/State Curriculum? Could you provide an example of inquiry based learning in Science? |
| Comparing the outcomes from the Australian/State Curriculum students who study Science and the IB DP students who study Science, what differences between student learning outcomes are evident?    |

Thank you very much for your participation.

## SURVEY FOR ENGLISH CURRICULUM LEADERS

In this survey we wish to gain an understanding of your view of how the IB Diploma Programme English curriculum is enacted at your school and how it compares to the Australian/State English curriculum.

If you have some knowledge of the new Australian Curriculum for senior secondary level, please answer the survey questions in relation to this. If you are not yet familiar with the new Australian Curriculum, please reflect on your state/territory's curriculum in comparison to the IB Diploma Programme curriculum for English.

|   |
|---|
| If you had the choice, would you prefer to teach the Australian/State Curriculum or the IB DP at senior secondary level? Why? |
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| What do you like about teaching the IB Diploma Programme English subjects? |
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| How do the syllabus of Australian/State Curriculum English subjects and the IB DP English language, literature and performance subjects compare at senior secondary level? |
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| What texts are used in the Australian context? |
|--|

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| Comparing the outcomes from the Australian/State Curriculum students who study English and the IB DP students who study English A: literature and performance subjects, what differences between student learning outcomes are evident? |
|---|

Thank you very much for your participation.

## SURVEY FOR HISTORY CURRICULUM LEADERS

In this survey we wish to gain an understanding of your view of how the IB Diploma Programme History curriculum is enacted at your school and how it compares to the Australian/State History curriculum.

If you have some knowledge of the new Australian Curriculum for senior secondary level, please answer the survey questions in relation to this. If you are not yet familiar with the new Australian Curriculum, please reflect on your state/territory's curriculum in comparison to the IB Diploma Programme curriculum for History.

|   |
|---|
| If you had the choice, would you prefer to teach the Australian/State Curriculum or the IB DP at senior secondary level? Why? |
|---|

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| What do you like about teaching the IB Diploma Programme History subjects? |
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|---|
| Do you include any study of indigenous peoples and cultures in your IB DP History course? If so, can you provide an example of how and where you do this within the IB DP History course? |
|---|

|   |
|---|
| In what ways do you include studies of Asian nations or culture in your IB DP History course and do you focus at all on Australia's relationship with Asia? Can you provide an example? |
|---|

|   |
|---|
| How would you compare the expected standard of achievement in the IB DP with those in the Australian/State Curriculum in relation to historical skills and knowledge? |
|---|

Thank you very much for your participation.

## APPENDIX 6

Documents consulted in the mapping process

|                              | Australian Curriculum  | IB  |
|------------------------------|--|---|
| <b>Overarching documents</b> | <p>Shape of the Australian Curriculum</p> <p>The Melbourne Declaration on Educational Goals for Young Australians (2008)</p> <p>AQF Australian Quality Framework</p>   | <p>Mission and Strategy</p> <p>What is an IB education? (2013)</p> <p>IB Diploma Programme- Overview</p> <p>The Diploma Programme. From Principles into Practice (IB DP, 2009)</p>                        |
| <b>Science</b>               | <p>Shape of the Australian Curriculum</p> <p>Australian Curriculum Design Paper (version 3)</p> <p>AC Senior Science Curriculum Documents (Nov 2012) for Biology, Chemistry, Earth &amp; Environmental Science and Physics</p> | <p>IB Diploma Programme Guides (First examinations 2009) for Biology, Chemistry, Physics and Environmental systems and societies (first examination 2010)</p>   |
| <b>Mathematics</b>           | <p>AC Senior Mathematics Curriculum Documents (Nov 2012) for Essential Mathematics, General Mathematics, Mathematical Methods and Specialist Mathematics</p>   | <p>IB Diploma Programme Guides (First examinations 2014) for Mathematical Studies SL, Mathematics SL, Mathematics HL and Further Mathematics HL</p>   |
| <b>History</b>               | <p>AC Senior History Curriculum Document for Ancient History</p> <p>AC Senior History Curriculum Document for Modern History</p>   | <p>IB Diploma Programme Guide (first examinations 2010) for History</p>   |
| <b>English</b>               | <p>Shape of the Australian Curriculum</p> <p>Australian Curriculum Design Paper (version 3)</p> <p>AC English Curriculum Documents (Nov 2012)</p> <p>AC the shape of the Australian</p>  | <p>IB Diploma Programme Guide, The Diploma Programme: From principles into practice (2009)</p> <p>IB Diploma Programme Language A: Literature guide (2011)</p> <p>IB Diploma Programme Language A and</p> |

|  |                               |   |
|--|-------------------------------|---|
|  | Curriculum Arts (August 2011) | <p>Literature guide (2011, updated August 2012)</p> <p>IB Diploma Programme Language and Performance guide (2011)</p> <p>IB Diploma Programme Guides, Programme standards and practices (January 2011)</p> <p>IB Clarifications for the groups 1 and 2 courses, First Examinations (2013)</p> <p>IB English A Prescribed list of authors (2011)</p> <p>IB Prescribed literature in translation, (2011)</p> <p>IB Prescribed literature in translation, Additional guidance, Critical summaries of selected works (2012)</p> |
|--|-------------------------------|---|