The Winston Churchill Memorial Trust of Australia

Report by Stephen Inglis 2012 Churchill Fellow

A study of the effectiveness of student-directed, research-based learning as a senior secondary subject in Singapore, United Kingdom and the United States of America

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Signed

Dated
# TABLE OF CONTENTS

INTRODUCTION ........................................................................................................ 1

EXECUTIVE SUMMARY ............................................................................................ 3

STUDY BACKGROUND .............................................................................................. 5

PROGRAM OF ENGAGEMENT .................................................................................. 9

SINGAPORE ............................................................................................................ 11
  Case Studies .......................................................................................................... 15
  Notable features from Singapore ........................................................................... 17

UNITED KINGDOM ................................................................................................... 18
  England .................................................................................................................. 18
  Case Studies .......................................................................................................... 29
  Wales ...................................................................................................................... 36
  Notable features from England and Wales ............................................................ 38

INTERNATIONAL EDUCATION .............................................................................. 39
  Cambridge International Education ....................................................................... 39
  International Baccalaureate .................................................................................... 42
  Notable features from International Education Agencies .................................... 46

UNITED STATES ...................................................................................................... 47
  Case Studies .......................................................................................................... 51
  Rhode Island ........................................................................................................... 51
  North Carolina ....................................................................................................... 55
  Connecticut ............................................................................................................. 61
  Notable features from United States ..................................................................... 66

CONCLUSIONS AND RECOMMENDATIONS ......................................................... 68

LIST OF REFERENCES ............................................................................................... 76
INTRODUCTION

Education plays a vital role in preparing young people to realise their full potential, to create and take advantage of opportunities, and to contribute to national prosperity. The need for highly skilled and innovative young people to meet future technological, social, political, environmental and economic challenges has never been so pronounced. Like all sectors of society, education has and continues to change significantly in response to today’s information rich and technologically connected world. Few would question UNESCO’s education mission statement that ‘every child has the right to an education’, but many people differ in opinion on what is the right education.

Educators and decision-makers worldwide are grappling with how to best engage students in their learning and prepare them for effective and rewarding participation in society. In response, governments worldwide are conducting reviews of senior secondary education to examine how and where students learn best, what to teach, and how to measure learning.

Featuring prominently in reviews and reforms worldwide, and in educational literature, is reference to the benefits of students undertaking self-directed, independent research-based learning. Boldly, in response to a review of senior secondary education in South Australia, the Research Project was introduced as a compulsory Year 12 subject in 2011. The Research Project is a student-directed, research-based subject that is a requirement for successful completion of the South Australian Certificate of Education (SACE).

This study, made possible by the Churchill Memorial Trust, examines independent research-based subjects similar to the Research Project in Singapore, UK and the USA, as well as those offered by international education agencies. These subjects are labelled by various titles, such as: Project Work in Singapore, Extended Projects in the UK, and Senior Projects, Culminating Projects or Capstone Projects in the USA. Although the term ‘project’ does not do justice to the essence of student-directed research, it is common to all titles and therefore is used throughout this paper as a general reference to these senior secondary learning experiences.

This paper commences with a summary of the Research Project in South Australia followed by detailed consideration of projects each in the three countries visited. The study concludes with a set of recommendations intended to contribute to the ongoing improvement in the effectiveness of this student-directed, research-based learning in South Australia and elsewhere.

I bring to this study a privileged and unique insight into the implementation of the Research Project in South Australia that has spanned the last five years. This started in my capacity of Senior Curriculum and Assessment Officer at the SACE Board of South Australia where I was closely involved in the implementation of the Research Project. This close involvement included: the consultation and writing to prepare the curriculum; the development of implementation guidelines, exemplars and support materials; the provision of teacher training to prepare for implementation; followed by oversight of state-wide implementation of the subject in schools and the moderation and external assessment processes during the first year of implementation in 2011. I also bring to this study experiences teaching this subject in 2012 and 2013 at Marden Senior College in my role as Assistant Principal. A unique and privileged perspective indeed.
Acknowledgements

Firstly, I wish to thank my wife Susan and daughters Amelia and Sarah for their support throughout my Churchill Fellowship experience. A project of this scale would not have been possible without their support and understanding over the months of evening and weekend hours of preparation and report writing. I also thank you for not missing me too much during my six weeks abroad.

Thank you to those who suggested the idea of a Churchill Fellowship to me, and to Dr. Antonio Mercurio for his initial support and on-going encouragement and expertise. Thank you to the staff and students at Marden Senior College for their understanding and support before, during and after my study tour. I also wish to thank Anne Harvey for being a wise defacto mentor.

I am grateful to the many people who have generously offered their time and expertise in Singapore, United Kingdom and United States of America. I hope that my endless email communications are now forgiven and replaced by a mutual benefit of our face-to-face meeting and overall ideas exchange. I look forward to maintaining contact and an interest in your future endeavors in the field of education.

Finally, I thank the Churchill Fellowship Memorial Trust for enabling me to travel overseas and be immersed in an area of personal interest and significance to education is South Australia and beyond.
EXECUTIVE SUMMARY

Study aim: To optimize the effectiveness of student-directed, research-based learning as a senior secondary subject.

The introduction of the Research Project as a compulsory senior secondary subject in South Australia was a bold decision. It represents the first, and to date only, of the seven Australian senior secondary certificates to commit to introducing a student self-directed, research-based subject (projects) as a high school graduation requirement. The introduction is not without controversy however.

It was during 2011, the first year of Research Project implementation that I applied for this Churchill Fellowship and since then much has transpired, including an evaluation of the first year of the reforms to the SACE that resulted in the reinforcement of the Research Project as a valued feature of the certificate. Within this context this six-week study was undertaken from 4 March to 10 April 2013.

Educational literature suggests that there is no doubt about the virtues of this learning in theory; the question, however, is “How can it be most effectively implemented in practice?”. This study aims to contribute to ongoing improvement in the effectiveness of student learning through the Research Project and equivalent learning experiences worldwide. Made possible by the Churchill Memorial Trust, the study examines similar senior secondary independent research learning experiences in Singapore, UK and the USA, and those offered by international education providers.

The investigation highlighted that projects can motivate and extend students in their senior secondary learning and develop the skills that educators believe best prepares them for work, study and life in the 21st century, and for many, into the 22nd century. It also helped explain the serious challenges faced implementing the subject, and help suggest strategies to optimize its effectiveness. The study concludes with a set of recommendations, some are options for immediate implementation in schools, others more system-wide recommendations intended to provide stimulus for further discussion. Apart from the conclusion that projects can and are achieving their potential as a challenging and worthwhile learning experience for senior secondary students in many parts of the world, two major findingsemerge:

- The perception of the subject amongst students is crucial to its success and the responsibility for this perception does not rest alone with teachers.
- It is to be expected that the subject will take time to be widely valued, particularly when its implementation is mandated, yet after the first 3-4 years, once valued and accepted, the challenge shifts to keeping the learning from being predictable or ‘tamed’.

Learning is a personal experience to be achieved, in the school context, for the masses within budgetary constraints. Student-directed, research-based learning experiences are not ‘the answer’ but are part of the solution. Perhaps Winston Churchill had it right when he wrote, ‘Personally I’m always ready to learn, although I do not always like being taught’.
The learning from the fellowship will be implemented and disseminated through the following means:

- Sharing my insights through formal presentations and informal discussions with teachers, SACE Board personnel, and others as the opportunities arise
- Distributing this paper to educators involved in the study in Singapore, UK and USA and respond to any enquiries received
- Using my influence to positively promote the value of project learning, and challenge negative perceptions, amongst students and the wider community.
- Contributing to best practice in my role as Assistant Principal and Research Project teacher at Marden Senior College, Adelaide, and contribute to an on-going community of practice amongst educators in South Australia
- Being as accommodating with those interested in learning from my experiences as those who so openly and generously shared their time and expertise throughout my study.

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STUDY BACKGROUND

It was not that long ago that the majority of young people left school before finishing Year 12 (see Figure 1), and the purpose of those who stayed was clear – university preparation. As part of its current education reform agenda the Australian government has a goal of 90 per cent Year 12 attainment by 2015 (COAG, 2013).

The landscape has changed dramatically, and must continue to change, in response to rapid social, political, technological, environmental and economic changes globally. Identifying the needs of today’s young people and the skills they will need in coming ten, twenty, or more years is a major challenge for educators.

Source: Australian Bureau of Statistics (ABS) Schools, Australia, 1984-2010

Economies today require highly skilled people and credentials are increasingly important. The challenge for governments and educators is how to provide a senior secondary education to better meet the needs of young people.

Curriculum designers are grappling with how twenty-first century learning does not fit neatly into a curriculum solely organised by learning areas or subjects that reflect the disciplines. A common response is the articulation of a set of skills, attitudes, or qualities for young people to develop to live, learn, work, and participate successfully in a changing world. A core intention of these capabilities is to provide greater purpose, coherence and continuity to the curriculum that a student experiences. The recently developed Australian Curriculum includes a set of seven general capabilities (See Figure 2) that ‘encompass the knowledge, skills, behaviours and dispositions that, together with curriculum content in each learning area and the cross-curriculum priorities, will assist students to live and work successfully in the twenty-first century’. (ACARA, General capabilities in the Australian Curriculum).
Figure 2: Australian Curriculum General Capabilities

<table>
<thead>
<tr>
<th>Literacy</th>
<th>Numeracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and communication technology capability</td>
<td>Critical and creative thinking</td>
</tr>
<tr>
<td>Ethical behaviour</td>
<td>Personal and social capability</td>
</tr>
<tr>
<td>Intercultural understanding</td>
<td>Intercultural understanding</td>
</tr>
</tbody>
</table>

Source: ACARA, Australian Curriculum website.

These capabilities, and other broader cross-curriculum purposes of education, are generally embedded within subject curriculum; however, in some curriculum the focus is shifted from subject content towards the ideal of the capabilities. One such initiative is the introduction of the Research Project in South Australia.

**The South Australian Research Project**

The Stage 2 (Year 12) Research Project was introduced as a subject from 2011 as the result of a significant review of South Australian senior secondary education. It now a compulsory requirement of the South Australian Certificate of Education (SACE), with students needing to achieve a grade of C- or better to achieve the certificate. The Research Project contributes 10 of the 200 credits required to complete the SACE. As a 10-credit subject it is intended to require 60 hours of programmed time. Figure 3 summarises the requirements of the SACE and how the Research Project fits within these.

In the Research Project students choose an area of interest to them and use their creativity and initiative to undertake research and develop and present their findings. They also explore and develop one or more capabilities in the context of their research. As outlined in the SACE Research Project Subject Outline (2013), the subject enables students to explore an area of interest in depth, while developing skills to prepare them for the further education, training, and work. Students develop their ability to question sources of information, make effective decisions, evaluate their own progress, be innovative, and solve problems. The Research Project enables students to develop planning, research skills, synthesis, evaluation, and project management skills. Figure 4 outlines the key elements of the subject.

The implementation of the Research Project has presented significant challenges. Teachers have had to adapt to a new way of working with students (in some cases), and, as with any change, understanding, confidence and ownership takes time. Overall structural changes to the Year 12 curriculum, the high stakes nature of Year 12, and the need for the Research Project to be relevant and accessible for the full range of students, have also contributed to the challenges faced. Another interesting challenge the subject faces is the claim that it is not meeting the needs of male students as well as it does female students. As evident in Figure 5, an analysis of first year results data shows that females outperformed males significantly with approximately 70% of the A grades achieved by females (note: the identical percentage skew occurred in 2012, the second year of implementation). This graph represents the grades of the 14,568 students who undertook Research Project B (ATAR option) in 2011.
Figure 3: South Australian Certificate of Education Requirements

There are two stages of the SACE:
- Stage 1, which usually begins in Year 10, with students studying the Personal Learning Plan, and continues through Year 11.
- Stage 2, which is usually undertaken in Year 12 (the final year of schooling).

Each subject or course that is successfully completed earns 'credits' towards the SACE. Students receive a final grade from A to E for each Stage 1 subject and A+ to E- for Stage 2 subjects.

To qualify for the SACE students must:
- complete a minimum of 200 credits
- achieve a C grade or higher in the Stage 1 compulsory subjects
- achieve a C- or higher in the Stage 2 compulsory subjects.

The compulsory requirements are:
- Personal Learning Plan – 10 credits at Stage 1
- Literacy – at least 20 credits from a range of English subjects (Stage 1 or Stage 2)
- Numeracy – at least 10 credits from a range of mathematics subjects (Stage 1 or Stage 2)
- Research Project – 10 credits at Stage 2
- Other Stage 2 subjects – that total at least 60 credits

The remaining 90 credits can be gained through additional Stage 1 or Stage 2 subjects or Board-recognised courses (such as VET or community learning) of a student’s choice.

Source: About the SACE from the SACE website

Figure 4: Key elements of the Research Project (for teaching in 2014)

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
<th>Research Framework</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| In this subject, students are expected to: | The four parts of the research framework for Research Project B are: | Student material assessed School Assessment (70%)
| 1. generate ideas to plan and develop a research project | - initiating and planning the research | Folio (30%). Consists of three parts: proposal, research development, and discussion. |
| 2. understand and develop one or more capabilities in the context of their research | - developing the research | Research Outcome (40%)
| 3. analyse information and explore ideas to develop their research | - producing and substantiating the research outcome (synthesis) | External Assessment (30%)
| 4. develop specific knowledge and skills | - evaluating the research. | Evaluation (30%)
| 5. produce and substantiate a research outcome | | Assessment Criteria
| 6. evaluate their research. | | - planning
| | | - development
| | | - synthesis
| | | - evaluation. |

Source: Adapted from the SACE Research Project B Subject Outline 2014
A first year evaluation of the SACE was conducted and the Research Project featured prominently in the feedback received. The challenges mentioned above and others were raised, and in response, the importance of the Research Project was strengthened.

From 2014, the Year 12 Research Project will be retained as a compulsory requirement for SACE completion, with some refinements. An optional Year 11 Research Practices subject has also been introduced to enable students to develop the skills required. Furthermore, there is a commitment to promoting excellence in the teaching and assessment of the Research Project. Refinements to the Year 12 subject include expanding points of differences between two versions available – one version, that can count towards Australian Tertiary Admission Rank (ATAR) calculations, with a more academic focus and the requirement that the externally assessed Evaluation is written; and the other, that is not a tertiary admission subject, that does not require students to produce the external assessment in written form.

The timing of this Churchill Fellowship has straddled the release of the first year evaluation findings and resultant strengthening of the Research Project in South Australia. Findings from this Churchill study have been, in a small way, able to contribute to the new directions for the subject, and will hopefully be able to contribute to promoting excellence in the teaching and assessment of the Research Project.
PROGRAM OF ENGAGEMENT

Singapore
4 – 8 March 2013

Singapore Examination and Assessment Board
Ms Karen Chong, Senior Assessment Specialist and Christine Goh, Assessment Manager with Project responsibilities
Assessment and Research Division

Singapore Ministry of Education
Simon Reynolds, Assistant Director, English Language & Literature Branch, Curriculum Planning and Development Division
NurSabariah Mohamed Ibrahim (Ms), Curriculum Planning Officer / English Language (Pre-University), Curriculum Planning and Development Division

Hwa Chong Institution (College)
Nirmala, Principal Consultant for Project Work, and a couple of her team members.

England and Wales
11 – 30 March 2013

Rugby School, Edexcel Awarding Agency
Dr John L. Taylor, Head of Philosophy and Director of Critical Skills, Rugby
Edexcel EPQ Chief Examiner

AQA Awarding Agency
Dr Ian Stockford, Head of Education Research, AQA
Charlotte Christie, Qualifications Manager: AQA

OCR Awarding Agency
Ms Margaret Gardiner, OCR Principal Moderator, Level 1, 2 & 3 Projects

Iceni Academy (formerly Methwell High School)
Mark Wassell and Alison Tilbrook, Vice Principals, Neil Groves, Data manager, and various staff.

Dereham Sixth Form College, Dereham
Jenny Almond, Head of Psychology and Sociology and Extended Project Coordinator

Haggerston School, Hackney, London
Andrea Pompheyre, Projects Coordinator

WJEC (formerly Welsh Joint Education Committee) Office, Cardiff
Tessa Gabriel-Davies, Subject Officer of project qualifications

IB Offices, Cardiff
Fabrizia Flynn, Subject Manager (Assessment), and Angela Riviere, Subject Manager (Curriculum)

Cambridge International
Karen Bryer, Senior Assessment Specialist, Cambridge International
United States of America
2 - 10 April 2013

Rhode Island

Dr. Betsy Shimberg, Brown University at the Swearer Center for Public Service
Capstone projects judge at Beacon Charter and a member of the Rhode Island Board of Regents for Elementary and Secondary Education

Dr. Rosemary Burns, Assistant Principal, New England Laborers’/Cranston Public Schools Construction and Career Academy
Cranston, RI

Beacon Charter High School for the Arts
Dr. Michael Skeldon, Principal, Beacon Charter High School for the Arts, and author of doctoral dissertation *Perceptions of Judges Toward Rigor of High School Senior Capstone Projects at a Northern RI Charter School*
And students and staff of Beacon Charter High School, Woonsocket, RI

North Carolina

Dr Maria Pitre-Martin, Division Director, K-12 Curriculum and Instruction
North Carolina Department of Public Instruction

Mooresville High School, Mooresville, NC
Nancy Gardner, English Chair and Senior Project Coordinator; and staff and students, Mooresville High School, Mooresville, NC. Nancy is also a representative and trainer for Senior Project®

Connecticut

Ann Gaulin and Judith Andrew both consultants with the Connecticut State Department of Education

Dr. Alicia Roy, Superintendent, New Fairfield High Schools and author of doctoral dissertation, *High School, the Principal, Public Policy, and the Senior Capstone Project: Foundations, an Implementation Model, and Effects*

New Fairfield High School
Mariana Coelho, Principal, New Fairfield High School and staff and students
SINGAPORE

Singapore is a nation of approximately 5 million people whose government invests significantly in education and Singapore prides itself on providing an innovative and rigorous education for its young people. Education in Singapore is managed by the Ministry of Education.

Education System

Students attend primary school for the first 6 levels and, based on results of the Primary School Leaving Examination (PSLE), undergo streamed secondary education. Secondary education consists of 4 to 5 levels and typically leads up to a Singapore-Cambridge General Certificate of Education (GCE) ‘Ordinary’ - ‘O’ level examination. Streaming occurs as students progress by way of the subjects they choose. The results of the ‘O’ levels determine which pre-university or post-secondary institutions students apply for.

Students spend 2-3 years in pre-university or post-secondary institutions, which are the equivalent to specialist senior secondary schools in Australia, such as Marden Senior College. Students who wish to pursue vocational education make up approximately 40% of the cohort and they attend post-secondary institutions such as the polytechnics and the Institute of Technical Education (ITE) to receive a diploma upon successful completion of their courses. Those aiming for university make up approximately 25% of the cohort and they attend Junior Colleges to complete CSCE A-levels over two years. Some students may miss the ‘O’ levels and move straight into ‘A’ levels or the IB Diploma in a six year secondary program. Students undertake final year Projects at polytechnics, and Project Work is a compulsory subject for the A-levels. The focus of my investigation is on Project Work.

There are twenty Junior Colleges in Singapore. 19 of these pre-university institutions offer a two-year A-level program, and the Millennia Institute offers it as a three year programme. I spent a morning at Hwa Chong Institute, one of the premier schools in Singapore that has a two year pre-university programme.

Enrolments at junior colleges across Singapore varies from 700 to 1200 students in each of the two year levels. The year levels equate to Australia’s Year 11 and 12 and generally consist of H1 subjects in Year 11 and H2 subjects in Year 12. In the two-year course, students undertake 5-7 subjects for the A-level. Three subjects are offered at the H1 level (General Paper, Mother Tongue and Project Work). Whilst 3-4 content subjects are offered at the H2 level over the course of two years. Mother Tongue and Project Work can be completed by the end of Year 1. General Paper, a compulsory H1 subject is offered across 2 years.

As mentioned above the Ministry of Education manages education in Singapore. They oversee all levels, primary to junior colleges, and lead curriculum development and implementation. The Ministry of Education state the ‘Desired Outcomes of Education’ as attributes as goals for educators to aspire to for every Singaporean to have by the completion of his or her formal education. These outcomes reveal many things about how Singapore values education, and explains why Project Work, a self-directed learning experience, is a compulsory feature of the junior college curriculum. See Figure 6 overleaf for a summary of the ‘Desired Outcomes of Education’
The other organisation of relevance to this investigation is the Singapore Examination and Assessment Board (SEAB). SEAB develops and conducts national examinations in Singapore and provides other examination and assessment services, locally as well as overseas. As part of this assessment standards quality assurance, SEAB develops the assessment requirements and criteria for the Project Work, and checks the consistency of Project Work internal assessments across schools.

**Project Work**

In response to the Asian financial crisis in the late 1990’s, Singapore reviewed its education system with the view of better preparing young people for a changing global economy. Industry leaders were consulted and many initiatives under the “Thinking Schools, Learning Nation (TSLN)” vision were introduced. The new focus was to develop students who are more than knowledgeable and technically competent; young people who are able to use their initiative and to work collaboratively and creatively to solve problems and drive innovation.

Project Work emerged from the TSLN vision in 2003. It was a bold and innovative initiative as the first wholly school-assessed subject, a stark contrast to the traditional content subjects with one-off examinations with which the Singapore public is very familiar.

Project Work is a compulsory subject in the Singapore-Cambridge GCE A-Level examination at the H1 level (Year 1 of the two year program) and is a compulsory subject for local university admission.

**Curriculum and Assessment Structure**

Students carry out their project over a 9 month period (the syllabus states a recommended time of 60–75 hours, assuming an average of 2.5 hours per week). Students undertake projects in groups of

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**Figure 6: Singapore’s Desired Outcomes of Education**

Source: Singapore Ministry of Education website

The person who is schooled in the Singapore Education system embodies the Desired Outcomes of Education. He has a good sense of self-awareness, a sound moral compass, and the necessary skills and knowledge to take on challenges of the future. He is responsible to his family, community and nation. He appreciates the beauty of the world around him, possesses a healthy mind and body, and has a zest for life. In sum, he is

- a **confident person** who has a strong sense of right and wrong, is adaptable and resilient, knows himself, is discerning in judgment, thinks independently and critically, and communicates effectively;

- a **self-directed learner** who takes responsibility for his own learning, who questions, reflects and perseveres in the pursuit of learning;

- an **active contributor** who is able to work effectively in teams, exercises initiative, takes calculated risks, is innovative and strives for excellence; and,

- a **concerned citizen** who is rooted to Singapore, has a strong civic consciousness, is informed, and takes an active role in bettering the lives of others around him.
4-5 students, working collaboratively to: define the project focus, analyse and evaluate the information gathered, prepare an oral presentation, and submit a written report. As detailed below, students are assessed on their performance both as members of the group and as individuals.

There are four learning outcomes for the subject: knowledge application, communication, collaboration and independent learning, with assessment focusing on knowledge application and communication.

Assessment consists of three components: written report, oral presentation and the group project file. Both the product and the process are assessed - the written report and oral presentation focusing on the product, and the group project file focusing on the process. The table below summarises the key features and the weightings of the three assessment components. Note the equal contribution of individual and group assessments.

**Figure 7: Project Work Assessment Structure**

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Details</th>
<th>Individual assessment</th>
<th>Group assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written Report</td>
<td>Formal exposition of 2500–3000 words</td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>Max. 20 min. per group for groups with 4 students (or 30 mins. for 5 students). May include a group presentation (eg PowerPoint presentation, skit, video or demonstration not exceeding 5 min.) Q &amp; A session of up to 5 minutes per student within the overall time allocated to the group</td>
<td>30%</td>
<td>10%</td>
</tr>
<tr>
<td>Group Project File</td>
<td>Individual submission: • Preliminary Ideas • Evaluation of relevant print/non-print Material • Insights and Reflections</td>
<td></td>
<td>20%</td>
</tr>
</tbody>
</table>

Source: Adapted from SEAB Project Work Syllabus (2013)

**Assessment Criteria**

The Written Report is assessed on: substantiation of ideas, generation of ideas, analysis and evaluation of ideas, and organisation of ideas.

For the Oral Presentation each student is assessed on: fluency and clarity of speech, awareness of audience, and response to questions. The effectiveness of the group presentation is also assessed.

The Group Project File consists of a group project proposal and the three individual pieces described in the table above and is assessed on generation of ideas, and analysis and evaluation of ideas.
Features of Project Work

Those involved in the Project Work emphasised the value placed on students applying their knowledge and taking action in real-life situations. Students are advised to gather real world data from surveys, interviews, fieldwork or experiments. This was made evident by use from an example of a group of students’ project that investigated the use of music therapy for stroke sufferers. These students applied their research by conducting trials with hospital patients. This illustrates how action in real-life situations is valued.

A distinguishing feature of the Project Work is that Project Topics are provided centrally for students by SEAB. Two different project tasks are provided each year for students with very brief guidance. In 2012 these were:

1. “That Eureka Moment”. Encouraging students to explore the world of invention and/or discovery in a particular field and then use findings to benefit the community.
2. “Waste Not, Want Not”. Encouraging students to consider the issue of wastage in a particular area and then suggest ways of reducing waste.

Previous year topics:

<table>
<thead>
<tr>
<th>Year</th>
<th>PW Topics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>More than meets the eye</td>
<td>To be or not to be</td>
</tr>
<tr>
<td>2004</td>
<td>Far Horizons</td>
<td>Measure Up</td>
</tr>
<tr>
<td>2005</td>
<td>Natural Forces</td>
<td>New Perspectives</td>
</tr>
<tr>
<td>2006</td>
<td>Momentum</td>
<td>Traditions</td>
</tr>
<tr>
<td>2007</td>
<td>Groundbreakers</td>
<td>Entertainment</td>
</tr>
<tr>
<td>2008</td>
<td>Journeys</td>
<td>Modernisation</td>
</tr>
<tr>
<td>2009</td>
<td>Emergency</td>
<td>Conservation</td>
</tr>
<tr>
<td>2010</td>
<td>Alternatives</td>
<td>Amalgamation</td>
</tr>
<tr>
<td>2011</td>
<td>Risk</td>
<td>Conflict</td>
</tr>
<tr>
<td>2012</td>
<td>That Eureka Moment</td>
<td>Waste Not, Want Not</td>
</tr>
</tbody>
</table>

Assessment Quality Assurance

Each school takes responsibility for the internal assessment standards and the Singapore Examination and Assessment Board (SEAB) quality assures assessments externally.

At a school level there is a team involved in the assessment and moderation of the standards overseen by a Chief Internal Moderator consisting of: Assessors (supervising teachers) and three Assistant Chief Moderators (one for each assessment component - Written Report, Oral Presentation, Group Project File). Standards are adjusted and agreed to internally before results are submitted to the SEAB. Assessors other than the supervising teacher of the particular group of students conduct Oral Presentations.
SEAB selects a sample of student work from each school to externally quality assure these standards. Oral Presentations are live performances and SEAB provide two external assessors to attend a selection of presentations at each school.

Case Study: Hwa Chong Institute

The program is conducted over nine months with assessments concluding in October/November each year. The following is a crude summary of how a program unfolds at Hwa Chong Institute, a large school with a Junior College that has a strong academic culture.

Preparation (4-6 weeks concluding early March)
Classes of 20-25 students are formed and preparatory work is undertaken to hone research skills and clarify learning and assessment requirements based on the previous years Project Work exemplars.

Topic release and preparation of Preliminary Ideas
SEAB releases the two topics for the year and individual students research and explore ideas to prepare the Preliminary Ideas assessment piece (500 word maximum). After four or so weeks the Preliminary Ideas are submitted to the Supervising Teacher.

Groups formed
Groups of 4 or 5 students are formed. Although students have an opportunity to request who they would prefer not to work with, the school, with a degree of direction from SEAB, nominates group members. Most schools use guidelines such as ethnicity, nationality, gender and ‘O’ level English grade in forming the groups. The rationale is to promote interaction between different groups of students and/or avoid the bunching of ability in one group. As the grouping is done rather early at the start of the coursework, tutors still consider the grouping random as they do not know their students very well.

Preparation of Group Project Proposal
Students share their Preliminary Ideas and collaborate and negotiate to determine a direction for the group project and prepare the Group Project Proposal.

Ongoing research and report preparation
Students designate various roles within the group and carry out the research to develop the project. At strategic points supervising tutors request to see emerging sections or ‘chapters’ of their Written Report and evidence of Evaluation of relevant print/non-print Material and Insights and Reflections.

Preparation of materials for assessment
Students refine their individual materials to be presented in the Group Project File (Evaluation of relevant print/non-print Material and Insights and Reflections), finalise the Written Report, and prepare for the Oral Presentation. The Evaluation of relevant print/non-print Material is submitted about a month before the submission of the Written Report.

The school prepares the schedule for the Oral Presentations and SEAB identifies groups selected at the school for external visit moderation.
Oral Presentations and final submission of materials (October/November)

Oral presentations are conducted as per the schedule. The Insights and Reflections piece is submitted upon completion of the Oral Presentation. The Written Report is submitted about a week before the Oral Presentation in late October.

Assessment quality assurance and result release

Student work from the selected sample from each school is submitted to SEAB with all school assessment data in early January. Following external moderation by SEAB, results are ready for release in early April.

Internal moderation processes within the school need to fit around this moderation schedule.

Teachers involved in Project Work

Although one cannot generalize from observations and discussions with a team of Project Work teachers at one school, it is worth noting the following about the role of the teacher:

- although a few teachers are specialist Project Work teachers, most teachers involved also teach at least one other subject (e.g. Maths, Biology, etc.)
- there tends to be a rotation of teachers of Project Work from year to year with a core of experienced teachers remaining to ensure the quality of the subject at the school
- an induction process for teachers new to the subject is part of the in-school moderation process
- pre-service teachers intending to teach in Junior Colleges are required to undertake a module in Project Work as part of the National Institute of Education (Singapore’s teacher college)
- the disposition of the teacher rather than the training or subject expertise was seen as the best indicator of suitability and success of a Project Work teacher.

Evolution of Project Work

The introduction of Project Work in Singapore in 2003 was indeed a bold initiative given the traditional importance placed on exams. The coursework or school assessed nature of Project Work is new for the A-level landscape. It seems that the introduction of Project Work had similar distractors as the Research Project in South Australia has experienced in its early years, including claims that some teachers were not confident or capable in the learning process or the assessment requirements. There was also uncertainty at times experienced by students and claims of assessment unreliability. The feeling is that these concerns have dissipated through continued teacher training, the on-flow of information and experiences learnt over time. Project Work is now widely accepted and valued by teachers, students and the community. Teachers are now confident in delivering the subject and the assessment is more advanced.

There have also been the following refinements to the assessment of the Project Work in response to feedback:

- a reduction in the volume of material required from each student. Initially students prepared a lengthy folio of evidence for the Group Project Folio. The Evaluation of Material
requirements are now restricted to evidence of analysis and evaluation of three pieces of print/non-print materials that cannot exceed 600 words. Teachers usually guide students to choose only one document to evaluate so they have a focus within 600 words to evaluate in depth. The Insights and Reflections part of the Group Project File is contained to 500 words maximum.

- collaboration was initially assessed. Although collaboration is valued and an integral part of how students undertake Project Work, the process of collaboration has been removed as an assessment criteria.

**NOTABLE FEATURES FROM SINGAPORE**

- As a nation Singapore values education highly and it has a clear, uniform educational direction under the central management of the government’s Ministry of Education.
- Project Work is compulsory for all students undertaking the pre-university senior secondary education and projects also feature at the more vocationally inclined polytechnics.
- Project Work assessment is a stark contrast to examination assessment in their other subjects.
- Project Work is taken over a 9-month period with a recommended time of 60–75 hours.
- Two set topics are centrally provided by SEAB each year to frame student research. This has many advantages, including the ability to focus topic consideration and to pursue national imperatives, however, while these topics work for pre-university students in Singapore, they may not suit the full range of students as is the situation for the Research Project in South Australia.
- Collaboration is valued with students working on Project Work in groups of 4 or 5.
- An Oral Presentation is an important part of the assessment and an external moderator visits the school to observe a sample of presentations for moderation purposes.
- Apart from the 2,500-3,000 word written report outcome the volume of materials required for assessment is tightly contained. For example, the ‘Evaluation of relevant print/non-print Material’ section, the equivalent to the Research Project’s information analysis section of the Folio, is contained to 600 words.
- Although Project Work has three assessment types it is marked holistically. The assessment criteria used are similar to the Research Project in South Australia.
- Schools have strong in-school moderation processes with project-trained teachers adopting various positions of responsibility.
- Project Work was introduced fully for the first time in 2003 and experienced similar restrained support and skepticism of its worth in the in the first few years as is the case for the SACE Research Project in South Australia.
- Through some minor adjustments to the subject over the time of its implementation, it seems that Project Work is now a well-accepted and valued part of pre-university education.
UNITED KINGDOM

Projects are offered to students in England, Wales, and Scotland by a number awarding agencies. All agencies approached were keen to share insights and be a part of my Churchill study visits. Due to time constraints my attention was focused on England and Wales. Scotland has an independent educational system, details of which have not been included in this report.

England

England’s strong education tradition, and its population of approximately 52 million people, are clear determinants of why the structure of its senior secondary education system is different from that of Australia, and South Australia in particular. Examinations and assessments play a key role throughout the system. Assessments take place for pupils aged 7, 11, 14 and 16. Students at 16 undertake formal examinations as part of the General Certificate of Secondary Education (GCSE). As with the health service, education is available free of charge for everyone in England, however, with this comes significant measurement and accountability of schools. An independent body called Ofsted (Office for Standards in Education, Children’s Services and Skills) inspects and regulates schools and reports directly to Parliament. Published league tables and access to the school of choice for students are important drivers in English education.

The education landscape is changing rapidly in England. Through the school accountability measures there is a shift away from local authority management towards individual school control under national government oversight. One of the mechanisms used to achieve this shift is the introduction of academies. Academies are independent, state-funded schools, which receive their funding directly from central government, rather than through a local education authority. Conversion to an academy involves a sponsor; such as a local business, philanthropist or educational charity. Increased autonomy of an academy includes the opportunity to set teacher salaries outside of union negotiated national salaries. The length of the school day can also be changed. Needless to say, academies are controversial. More information on academies is available under the summary of my visit to Iceni Academy, Norfolk.

Data collection and Ofsted inspection outcomes drive school accountability. Targets are set for a school, including attendance and other measures. The most important measure is student achievement targets. Achievement is based on attainment raw scores (mainly examination based assessments) and progress measures. The end of Year 6 (generally 11 year olds) is a key stage where students are assessed through national literacy and numeracy tests and teacher judgments on national curriculum standards. From this base, an expected student progress rate is determined and this is pivotal in monitoring how a student is progressing through their secondary education. ‘Value-added’ has become a key concept in English education because schools have to show how they are ‘pushing’ children beyond what is expected of them.

Students are measured again at Year 9 (national examinations recently scrapped) and then the all important GCSEs at Year 11, followed by the A-levels in Year 13. Achievement levels and sub-levels are continually monitored by students, teachers, parents and school administration throughout secondary schooling, with assessments reported to parents on an annual basis. All schools have to publish, on-line, their Ofsted reports and examination results.
Ofsted carry out hundreds of inspections and regulatory visits throughout England each week, and publish the results on their website. School inspections include observation and assessment of individual teachers and scrutiny and defence of school data. Inspections may be as infrequent as every 3-5 years for some schools, but once a school is rated as ‘requiring improvement’ it goes into ‘special measures’ and is much more closely monitored with perhaps 3 or 4 Ofsted inspections in a year. It is through Ofsted inspections, or by school choice, that schools may become academies.

**Curriculum and Awarding Agencies**

Nationally the government plays a significant role in shaping the direction of education, and a body called Ofqual (Office of Qualifications and Examinations Regulation) regulates qualifications, examinations and assessments nationally. In a competitive market a number of awarding agencies, also known as exam boards, provide to schools curriculum specifications and assessments (predominantly through examination), training and educational resources, and quality assure standards through marking and moderation.

In England there are three awarding agencies:

- AQA (Assessment and Qualifications Alliance)
- Edexcel (a Pearson company)
- OCR (part of the Cambridge Assessment Group)

Schools choose a different awarding agency for different subjects. In fact they may use one agency at A-levels and another for GSCE for the same subject. Preferences are based on the perceived quality of the service provided, including the teacher support. All three boards offer Projects at GSCE and A level.

In the United Kingdom, besides the three English awarding agencies, there is also a Welsh board, and a Scottish board. It is also the location of some of the major players in international education. Two international organisations, International Baccalaureate and Cambridge International, are included in this study.

**Qualifications**

The English secondary curriculum from the age of 14 is based on qualifications. Qualifications are units of accredited learning mostly tested by examination. Results are awarded for each qualification, generally after two years of study. There are two key stages in secondary accreditation:

- GSCE (General Certificate of Secondary Education)
- A-levels (derived from Advanced Levels)

According to Ofqual (May 2012), over 90 per cent of young people in England complete senior secondary education. For the vast majority of students though, qualification results are not aggregated to form a graduation requirement or diploma. Qualifications remain as ‘stand-alone’ components. Although there have been attempts to introduce Diploma and Baccalaureate programs that package together specific subjects in a relevant field, their uptake is not widespread. The status of Diploma and Baccalaureate programs is difficult to understand, and seems to be an area of political involvement and features in reform discussions. Although the English Baccalaureate seems
'off again' there is an AQA Baccalaureate that is awarded to students and valued in university entry processes. The AQA Baccalaureate is an academic qualification similar to the IB Diploma in that it packages subjects studied (at least three A-levels) with an Extended Project, some broader study subjects, and enrichment activities (work experience, volunteering and personal development activities). Of relevance to this study is that Projects are a compulsory feature of all Diploma or Baccalaureate requirements.

GSCEs are typically undertaken by 14 to 16 year olds (Years 10 and 11). Students may study a diverse range of subjects in the GSCE, with some subjects, such as English and Maths, being compulsory as part of the National Curriculum. Students then sit national examinations to achieve qualifications. GCSEs are at levels 1 and 2 on the National Qualifications Framework. Grades D to G are deemed Level 1, and grades A* (similar to A+) deemed C Level 2. GCSE results are used to determine the student’s next stage of education or training.

In the UK there has historically been a clear demarcation between the academic and vocational routes for post-16 year olds. Generally, vocational study is taken either on a part-time or full-time basis at Further Education Colleges. Students who want to take academic qualifications have the option to enrol in a school sixth form, a Sixth Form College or a general Further Education College. Choice and results play an important role in the school/college selected and the course that a student is able to study.

A-levels are typically taken by 16 to 19 year olds (Years 12 and 13). According to Elizabeth Truss, the Parliamentary Under Secretary of State for Education and Childcare, A-levels ‘exist to prepare students for what comes next: either university - as is the case for 80% of A-level students - or the workplace’ (Truss, March 2013). Furthermore, ‘people generally agree that the primary purposes of A levels are to prepare students for higher education and to enable students to be selected according to ability and understanding’ (Ofqual, June, 2012).

Approximately 250,000 students each year gain A-level qualifications at the end of their studies (Ofqual, May 2012), representing about 50% of young people aged 16-18 (the compulsory schooling age is currently 16 years old, soon to rise to 17). Apart from this academic option, other pathways available to students over 16 include alternative academic qualifications (for example, IB, Cambridge Pre-U), training leading to a vocational qualification, and/or employment.

A-levels are assigned Level 3 on the National Qualifications Framework. They are designed to be taken over two years and there are no compulsory subjects. Students take far fewer subjects for their A-levels compared to students at the senior secondary phase in Australia and most other countries. The first year (called AS levels) typically consists of four qualifications, and most students drop one qualification in their final year (called A2 levels) to take three qualifications for university entry. As with the GCSEs, students sit examinations to be awarded the qualification. Most of the A-levels allocate only around 20 per cent of available marks to internally-assessed tasks, with the exception being the Level 3 Extended Qualification Framework, the focus of my study in the UK.

Review and reform of GSCEs and A-levels

GSCEs and A-levels have been under review since the end of 2012 and changes were recently announced for 2015, including:
• Curbs on coursework (school assessment) and increase focus on traditional end-of-course examinations
• Moves away from modular exams to end-of-course, or linear, exams at the end of the two year A-level course. This will do away with AS-level exams taken in the first year of the two year A-level program.
• Closer links with universities as to the content and standards of A-levels.
• New A-levels, with an initial priority on 'facilitating' subjects* to be ready for teaching from September 2015. The movement is towards students studying a common core of subjects with a focus on English and Mathematics.

*The influential Russell Group of universities facilitating subjects are: Mathematics and Further Mathematics, English (Literature), Physics, Biology, Chemistry, Geography, History and Languages (Classical and Modern).

Interestingly, one of the ten issues presented for consultation was, 'Would the inclusion of independent research, projects and extended essays bring additional depth to subject expertise?' (Ofqual, June 2012). In the resultant A-level reforms the Extended Project Qualification or EPQ (similar to the Research Project - see below) was endorsed as a means of broadening students’ A-level subjects and developing skills, including extended writing skills, to help prepare them for university. In the words of the Parliamentary Minister for Education, Elizabeth Truss (7 March 2013) ‘the real flexibility (of the EPQ) comes in the scope it gives students to design their own project – either alone or as part of a group. It develops and rewards creative and independent thought as well as research and planning. It represents the best of education, in that it is rigorous and demanding as well as adaptable and fun. Universities speak positively about the EPQ, and recognise it gives applicants the chance to develop research and academic skills that are highly relevant for study at higher education.’

England’s Research Project equivalent, the EPQ, received significant support in the review. Even though being made compulsory for all students was not mentioned in the new A-levels, its compulsory inclusion in the level 3 Diplomas and the AQA Bacc was reinforced. The introduction of an English Baccalaureate Certificate, with preference for facilitating subjects and a compulsory Extended Project, was favoured by some decision makers, but did not eventuate in the final reform.

**Universities**

Applications to almost all United Kingdom universities are managed by the Universities and Colleges Admissions Service (UCAS). A-level scores are an important determinant for university entry, although other considerations including other qualifications undertaken, pre-requisites, entrance exams, and possibly interview and portfolio evidence are used for some courses and universities. Entry appears to be based on what subjects the student does, how well they went, other personal qualities, and possibly an interview. Entry determinants vary from university to university, with most using three full A-level subjects with some sort of weighting given to a fourth qualification such as a ‘half’ A-level Extended Project or an AS level qualification. This is not well understood and it seems that Admission Tutors use some discretion to determine university entry. Anecdotally, some universities, including the more prestigious universities value the Extended Project in the selection process. Interestingly, at present, predicted, rather than post-results A-level data is used in the selection process.
As with the choice of school/college, the choice of university for students is driven by a number of factors, including examination scores and tuition fees. Because of rising academic costs, proximity to home has become an important factor in recent years. A hierarchy of universities exists built on prestige and history. The top 24 universities are known as the ‘Russell Group’. Even with this there is an additional hierarchy with Cambridge and Oxford and Imperial College London at the top. The more able (often middle class) students will be aiming to apply to a Russell Group university.

Projects

The UK Government conducted a significant review of secondary education in 2003/4 and the resultant report of the Working Group on 14–19 Reform (2004) proposed an extended project as a major reform feature to address the need for ‘participation and engagement’ and ‘greater stretch and challenge’. Subsequently the Department for Education and Skills (DfES, 2005) published its 14–19 Education and Skills White Paper, which led to the introduction of the Projects as a qualification in the UK. A two-year pilot of the Extended Project Qualification (EPQ) was undertaken prior to full implementation from September 2008.

A suite of projects are now available in England as qualifications: Level 1 Foundation Project, Level 2 Higher Project, and Level 3 Extended Project. The Level 3 Extended Project is designed to be completed by students in their final year and can contribute to university entry, and therefore has the most similarities to the South Australian Stage 2 Research Project. I shall focus on the Extended Project initially.

Level 3 Extended Project

The Extended Project is optional for students as a stand-alone qualification contributing to their A-levels. As mentioned above, it also forms one of the compulsory elements of the Diploma.

Since its inception, the Extended Project has grown in popularity as a qualification of choice for students, as shown in Figure 8 below. This growth can be attributed to a number of factors, including an increased awareness and confidence in the subject amongst schools as a valuable qualification.

Figure 8: Students achieving a result for the Extended Project Qualification in its first four years

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Male &amp; Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>11766</td>
<td>16806</td>
<td>28572</td>
</tr>
<tr>
<td>2011</td>
<td>10173</td>
<td>13926</td>
<td>24099</td>
</tr>
<tr>
<td>2010</td>
<td>6601</td>
<td>9357</td>
<td>15958</td>
</tr>
<tr>
<td>2009</td>
<td>2120</td>
<td>2974</td>
<td>5094</td>
</tr>
</tbody>
</table>

Source: Joint Council for Qualifications website

Educators with whom I spoke tended to agree that the early adoption by leading schools (e.g. Rugby), and acceptance by universities, are key drivers in the subject’s growth. It is interesting to note that the subject is now undertaken across a broad cross-section of schools. Universities recognise the Extended Project qualification as a valuable part of a student’s profile on their UCAS.
application. It can contribute UCAS points and is valuable to students in a university interview to show interest and expertise in an area of study. Apart from an increase in students undertaking the Extended Project, Figure 8 also shows that it is more popular with female than male students.

Accredited as a national qualification by Ofqual, the Extended Project is designed to be undertaken in 120 guided learning hours (1 year or half of a typical A level). Unlike any other qualification the results are 100% internally assessed and externally moderated.

Each awarding agency includes points of difference as to how it offers the Extended Project, although the learning and assessment requirements are, for obvious reasons, fundamentally the same. The Extended Project learning process involves students:

- choosing an area of interest
- exploring the topic chosen and preparing a proposal
- planning and carrying out the research
- providing evidence of the project development, including evaluating the project and their own learning
- producing an outcome of the project
- presenting their project outcome to a specified audience, and answering questions evaluating the outcome and research process.

Assessment is not based on assessment types. A holistic assessment decision is made by the teacher/school, based on all of the student work submitted for assessment, resulting in one grade being awarded, A*, A, B, C, D, E or N. Assessments are quality assured at a school level and centrally moderated by the awarding body. Four common Assessment Outcomes (criteria) are used to make assessment decisions, these are: Management of the project, Use of resources, Development and realisation of the project, and Review of the project. The Edexcel marking grid is included as Figure 9 below.

**Figure 9: Edexcel Level 3 Extended Project Marking Grid.**

<table>
<thead>
<tr>
<th>Assessment objective</th>
<th>Marks available</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AO1 Manage</strong> Identify, design, plan and carry out a project, applying a range of skills, strategies and methods to achieve objectives.</td>
<td>9</td>
<td>17%</td>
</tr>
<tr>
<td><strong>O2 Use resources</strong> Research, critically select, organise and use information, and select and use a range of resources. Analyse data, apply relevantly and demonstrate understanding of any links, connections and complexities of the topic.</td>
<td>12</td>
<td>22%</td>
</tr>
<tr>
<td><strong>AO3 Develop and realise</strong> Select and use a range of skills, including, where appropriate, new technologies and problem solving, to take decisions critically and achieve planned outcomes.</td>
<td>24</td>
<td>44%</td>
</tr>
<tr>
<td><strong>AO4 Review</strong> Evaluate all aspects of the extended project, including outcomes in relation to stated objectives and own learning and performance. Select and use a range of communication skills and media to present evidenced project outcomes and conclusions in an appropriate format.</td>
<td>9</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>54</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Edexcel website
Examination of the results of the Extended Project reveals that female students outperform their male counterparts (See Figure 11). Even though the achievement difference is not as pronounced as the Research Project (Figure 2), it does show that gender achievement gap is not unique to the South Australian Research Project. Interestingly, none of the educators consulted were aware of, nor surprised by, this trend.

**Figure 11: Extended Project Qualification 2012 - Results distribution by gender**

Each awarding agency has different forms and requirements to guide and manage assessment evidence, however, they share many common specification features. One of the most notable differences is that the Edexcel course, unlike AQA and OCR courses, specifies requirements for different types of projects – dissertation, investigation/field study, performance and artefact. Figure 10 summarises some of the structural similarities and differences between each agency’s Extended Project specifications.
Figure 10: Features of the Extended Project course specifications offered by the three awarding bodies in England.

<table>
<thead>
<tr>
<th>AQA</th>
<th>OCR</th>
<th>Edexcel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group work option</strong></td>
<td>Students may work as a group, individual evidence required for assessment.</td>
<td>Students may work as a group, individual evidence required for assessment.</td>
</tr>
<tr>
<td><strong>Guidelines on use of 120 guided learning hours</strong></td>
<td>Taught element 30 hours Independent student work 90 hours</td>
<td>Taught element 50 hours Independent student work 70 hours</td>
</tr>
<tr>
<td><strong>Project type choice</strong></td>
<td>Students are able to choose their project type, with flexibility built into the curriculum and assessment requirements to accommodate written dissertations, artefacts, designs, performances.</td>
<td>As per AQA – one curriculum and assessment structure with flexibility built in to accommodate different project types.</td>
</tr>
<tr>
<td><strong>School supervision of Research process</strong></td>
<td>Project Proposal form requires school approval</td>
<td>Project Proposal form requires school approval</td>
</tr>
<tr>
<td><strong>Assessment evidence: Record of planning and progress</strong></td>
<td>Set of AQA forms in a 15-page booklet provided to frame the evidence sought for assessment. Planning and progress documents:  ● Formal Project Proposal and Approval  ● Production Log and Assessment Record - including mid and end of project teacher reviews  ● A review of the completed project product  ● Summary of project product  ● Record of the presentation with student planning comments and teacher presentation comments Students may include additional journal and record of research materials.</td>
<td>Flexibility provided in the type of evidence to be provided by the students for assessment and potentially moderation. Two required forms:  ● Verification of topic/title (VTT) form - brief outline of proposed project.  ● Project progression record form prepared by student as a record of progress and signed by teacher at various stages for supervision.</td>
</tr>
<tr>
<td>Product/ Project Outcome</td>
<td>Project product</td>
<td>Project outcome</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>
|                          | ● Any form appropriate to the topic, including CD, Multimedia, photo journal  
|                          | ● Must include a written report of 1000 – 5000 words, dependent on nature of the product. If solely written then approx. 5000 words. | ● outcome can be a design, performance, report, dissertation or artefact. Video or photo evidence acceptable  
|                          |                 | ● Whatever form, the project must include a written component.  
|                          |                 | ● As a guide the dissertation should be approximately 5,000 words. For all other outcomes the written component should be approximately 1,500 to 2,500 words. | Evidence specified based on project type:  
|                          |                 |                 | ● Dissertation – 5000 to 6000 words  
|                          |                 |                 | ● Investigation/Field Study – 4000-5000 words  
|                          |                 |                 | ● Performance – performance + 1500-3000 word written piece. Video of performance required.  
|                          |                 |                 | ● Artefact – finished artefact (photo evidence if 3-D) + 1500-3000 word written piece. |

| Evaluation | Reflection of process in production log and assessment record. Elements within presentation, including question and answer segment. | Similar to AQA requirements | Similar to AQA requirements, i.e. generally consists of written evidence and within oral presentation. |

| Presentation | ● For a non-specialist audience using choice of media (e.g. PowerPoint, short video audience)  
|              | ● Live response to questions from the supervisor/teacher  
|              | ● Evidence available for moderation includes  
|              | ● teacher and student comments in Assessment Record (see above). | Presentation followed by a question and answer session. Students provide a range of forms of evidence of the oral presentation for moderation, including one or a combination of:  
|              | ● audio or audiovisual recording  
|              | ● copy of PowerPoint slides  
|              | ● detailed teacher notes as a record of the event. | ● Students present a summary of the main findings/conclusions or details of the performance/artefact to an audience.  
|              |                             | ● Should include a live response to questions from the supervisor/teacher/audience.  
|              |                             | ● Teacher observation records, not video/audio recording required as evidence. |

| Marking different types of outcomes | One marking grid suits all project types. | One marking grid suits all project types. | The four project types are treated as separate units, each with their own project proposal forms, product evidence guidelines, and marking grids. |

| Moderation | A sample of students work is requested by AQA and sent for moderation to the moderator | A sample of learners’ work will be requested from each centre by an OCR appointed moderator. Materials can be submitted for postal moderation or uploaded to the OCR Repository. | Sample of 10 students determined by agency. Internal standardisation within a centre expected. Schools submit work via post to the moderator. |

Sources: Edexcel, OCR and AQA websites
Evidence assessed

Flexibility exists as to how a student provides evidence for assessment because the material is viewed holistically to determine the final mark, no matter which agency. Each agency provides forms to guide students about the nature of the evidence required and teacher check points, particularly the record of research development/journal/log. These forms differ and, in some cases, their use is optional for students. What is common to all agencies are the four assessment outcomes/assessment criteria used: management, use of resources, development and realisation, and review. Assessors tend to seek evidence in particular parts of the materials submitted, with each agency having slightly different interpretations. In most cases students submit materials in a single portfolio divided into sections such as a record of planning and progress, the project outcome, and a record of presentation.

As outlined in Figure 10, each student submits a similar set of evidence, with the project outcome forming the centrepiece. The outcome is approximately 5000 words or equivalent, and is where the prime evidence for the development and realisation assessment criteria sought along with aspects of other criteria. Other evidence for assessment includes:

- Record of research development consisting of a project proposal, an activity log and evidence of project development, and an evaluation/review of the project outcome
- Evidence of the oral presentation.

Increasingly, agencies are providing proformas to guide the student evidence, and teacher assessment cues, beyond the outcome. For example, AQA provide a 15 page Production Log that students and teachers complete as evidence accompanying the Outcome and Presentation. According to some teachers the volume of evidence has reduced since the first year or two of implementation. It seems that teachers are becoming more strategic in the evidence they are seeking from students, with, for example, evidence for the outcome more focused on the criteria and the record of research process more contained and concise. An understandable, but not ideal trend detected, is an increase in the importance placed on teacher checks, observation records, and assessment comments, as evidence provided to support teacher marks at moderation.

Oral presentations generally consist of students giving a short presentation followed by a question and answer session. Over time, agencies have developed support materials and teacher strategies to conduct presentations more fairly and more efficiently. Set questions, audience questions and spontaneity are retained. From the people to whom I spoke, presentations were seen as a valuable part of the learning process. Most also commented that presentations take a significant amount of time to organise and conduct. It is uncommon for presentations to be recorded and generally evidence consists of printed slides from PowerPoint presentations or similar, with teacher notes and/or an observation record. Another aspect worth noting is that the oral presentation is not assessed in isolation. Although it provides important evidence against the review criteria, evidence for this criterion may also be found in the product and record of research evidence.
Moderation

Each agency uses much the same moderation processes to quality assure the school assessment standards. A sample of students from whom materials are required for moderation from each centre (school) is identified by the agency and materials are sent directly to the identified moderator. Most agencies seek only a sample of 15 students from the centre, even if the number of enrolments was very large.

Moderators may be practicing or retired teachers and possibly others such as university personnel. Moderators undergo training prior to receiving materials either online, face-to-face, or a combination of both. There is a hierarchy of moderators with Principal Moderators and a Chief Examiner.

Moderation works on a specified tolerance between teacher mark and moderator assessment, and when deemed outside of tolerance a principal moderator generally becomes involved and examines samples to quality assure the standard. Cases of extreme tolerance breaches may involve the Chief Examiner. The system is built upon the fact that there is a ‘correct standard’ and that this is held by those higher up the hierarchy.

Materials sent for moderation are the same as those used by the teacher to make assessment decisions. There is no selection to reduce the volume of materials submitted for moderation. Multimodal evidence is acceptable, although written evidence is still the dominant form. Word limits are guidelines only and often students exceed these. However, rarely is bulky evidence submitted for moderation. Students focus on the product and then identify their best evidence to submit to demonstrate criteria such as use of resources and review. Although there have been no changes to the qualification specification since its inception it seems that materials submitted for moderation have become more contained with students/centres tending to strategically focus on evidence that specifically demonstrates the assessment criteria with an emphasis on quality not quantity.

Level 1 and Level 2 Projects

The Level 1 Foundation Project and Level 2 Higher Project Level 1 are designed to take place over 60 guided learning hours and share many of the same features as Level 3 Extended Project, including:

- The same learning process (e.g. student chooses topic, etc.) and the same or similar agency provided forms to manage and provide evidence of learning (e.g. Proposal Form)
- The same Assessment Objectives (Manage the project, Use resources, Develop and realise the project, and Review the project)
- The same internal assessment and external moderation.

Although very similar structures and processes are used for the three levels, the Level 3 Extended Project is designed for twice the amount of learning hours with an expectation of greater depth of research, including a formal presentation. These expectations are apparent in the three marking grids used to determine the standard and its correspondence to the appropriate level (GCSE level for 1 and 2, A-level for 3). For example, the Level 1 Foundation Project does not have a requirement of independent research; instead what is required is ‘obtaining information’. This means that reading lists, references and suggestions for information gathering activities can be provided by the teacher, rather than found by the learners independently.
CASE STUDIES

Rugby School

Visiting Rugby School was an exceptional experience. Rugby is a prestigious and historic school with many famous ex-scholars. It occupies a series of buildings, like a neighbourhood, around the famous chapel, schoolhouse with tower, and the playing fields where the game of rugby was invented.

The day was spent with Dr. John Taylor, the Head of Philosophy and Director of Critical Skills. John is also the Chief Examiner of the Extended Project Framework for Edexcel. I appreciated the opportunity to observe and participate in two Project classes, Level 2 Higher Project and Level 3 Extended Project, and an after school ‘Philosophy Zone’ session. The Philosophy Zone is an opportunity for students from surrounding schools to enhance their learning of philosophy and Projects. Other experiences, including lunch with students in the old-fashioned house-dining space, made for a memorable day.

Life at Rugby is a “seven days of the week” experience for the majority of the 800 or so male and female students who are boarders. Students are organised in ‘family-like’ houses, with whom they spend much time together, including all meals in the house building. Houses have a housemaster/housemistress who provide the leadership and pastoral care for the group of boys or girls under their care. Saturdays are fully structured with morning lessons, afternoon games and evening entertainment activities. Sunday is partially structured with morning Chapel. Students spend one weekend in three at home or away from school. Each weekday morning starts with prayer in the Chapel for all. Other routines include Tuesday afternoon sport for all and community service activities for sixth form students on Thursday afternoons.

Projects are a valued part of the Rugby curriculum. The Level 2 Higher Project is compulsory for all GCSE students (Year 10/11) and the Level 3 Extended Project is an option for A-level students (Year 11/12/13). Both student levels were finalising their written submissions and preparing oral
presentations on the day of my visit. The standard of student work examined, past and current students, was very high, and reflected the depth of the “taught element” of programs and the support students receive from supervising teachers. The ability of the students to present their ideas verbally and to ask and answer questions was notably high.

Rugby School was closely involved in the early days of the development of Projects. Rugby instigated a ‘Perspectives in Science’ program based on the history, philosophy and ethics of science, with students undertaking their own research project on a topic of their choice. This program was part of the Projects trial and subsequently informed aspects of the Project specifications (curriculum and assessment requirements). John Taylor continues to be instrumental in the development of materials for Edexcel.

A feature of the Rugby program is the emphasis placed on philosophical discussions, and various ethical and philosophical frameworks. This first six or so weeks ‘taught-course’ program is primarily based on philosophical and ethical thinking activities. This provides useful frameworks for students to consider an issue, and the benefits were evident in the depth of thought in the final materials produced by students. Once students commence researching their own topic, even though they are working independently with support of their supervisor, all students follow a structure that involves deadlines for various sections of the project. The structure is roughly as follows:

- **Proposal** - Students negotiate the terms of the proposal and develop a research topic. The Edexcel Project Proposal Form is used to state the topic* and project format chosen (dissertation, investigation/field study, performance or artifact), provide a rationale for the study, and identify objectives for the research.

- **Literature review** - Students undertake a miniature literature review. This involves a taught aspect of the course on skills to access appropriate sources (including academically credible materials), bibliography writing, source evaluation, and writing a review in an academic style.

- **Research** - Students undertake wider research that may involve primary research and data collection, depending on topic and project form chosen.

- **Discussion** - Students then respond to the material they have researched by writing an analytical discussion. For a dissertation style response this involves students considering the main theoretical ideas on the topic, their own answer to the question with a supporting line of argument, identification and response to counter-arguments.

- **Conclusion** - Students write an evaluative conclusion.

- **First draft** - Students present a first draft complete with introduction, title page, table of contents, abstract, and appendix.

- **Evaluation** - Students evaluate the project and their learning.

- **Presentation** - Students usually prepare a PowerPoint presentation or similar and are likely to rehearse the presentation with a question and answer session in class with their peers prior to the formal Presentation assessment.

- **Final submission** - Students prepare materials for final submission and undertake oral presentation.

* A successful research topic is deemed pivotal to the success of a project. How it is expressed will depend upon whether the student is producing a dissertation, investigation/field study,
performance or artefact. For a dissertation, a specific research question is sought that is focused, extends the learner, and provides something to argue about.

Iceni Academy (formerly Methwold High School), Norfolk

Iceni Academy, located in rural Norfolk, has approximately 720 students from Year 7 to Year 13, with approximately 120 students per year level until Year 12. The school opened in 1958 as Methwold Secondary Modern (part of a selective system of education) before changing to Methwold High School in 1978 when Norfolk became comprehensive. The school converted to an academy from the start of 2013. The name change to Iceni Academy means more than school signage and student uniforms. The school is no longer under control of the Norfolk Education Authority; responsibility for the school now rests with the headteacher and the school’s ‘sponsor’. Although triggered by an unfavourable Ofsted assessment, the school opted to become an academy before being forced. This pre-emptive action enabled them to negotiate their own sponsor, rather than be allocated one by the government. They teamed with A.T.T., a consortium of professional people that sponsor a number of academies. Unlike some sponsors they are a not-for-profit organisation.

As an academy, national government funding is no longer administered by the local authority. Funds are now given directly to the school, with the school transferring some funds to the ‘sponsor’. The headteacher and sponsor then potentially have control over operational matters such as school hours, teacher appointments and pay. They are also accountable for the schools performance. With the intense accountability measures and potential changes to working conditions, it was of no surprise to hear in the media of teacher union unrest and planned industrial action. Having said this, there are many supporters amongst community members and some educators of the highly accountable and more deregulated educational environment.

Another challenge faced by the school in the more deregulated environment is the opening of another school, called a ‘free school’ in its natural catchment. This school, it seems, was formed by a group of interested parents who were able to meet the requirements to attract the government funding. To me, one of the most interesting aspects of this new school is the supposed use of ‘non-qualified’ people as teachers in some classes.

Apart from the transition into an Academy there were many other noteworthy aspects gleaned from my day at Iceni Academy. Before mentioning a few of these, a little about their curriculum and
The school does not offer GCSE or A-level projects, however, this year has seen the introduction of a new curriculum where they are tailoring the curriculum to the Year 7s based on ability. The lower level students are receiving extra literacy and numeracy lessons, whereas the highest level Year 7s are offered an extension pathway that involves a project in an area of interest as an extension of targeted subjects. The identified top 10 or so percent of Year 7 students work on their project with a librarian or subject teacher as a supervisor. This initiative is seen as a trial with the view that this may be continued as students progress through the coming years leading to potentially undertake a Level 2 or Level 3 project in the upper years.

Some observations on the structure and operation of the school and its curriculum:

There is a significant decline in the cohort size after GCSE (Year 11) from approximately 120 students at Year 11 to approximately 40 students for A-levels in Year 12 and 13. The Iceni Academy primarily offers a traditional, academic curriculum and the main purpose of A-levels is university preparation. This part of Norfolk does not have a strong culture of higher education (it is a low wage area) and consequently many students move to a nearby college that offers a more technical/vocational curriculum in Years 12 and 13, or move into the workforce. This attrition was noticeable when touring the school and seeing classes of more than 20 students in full school uniform (tie and blazer) up to and including Year 11, yet Year 13 classes of less than 5 students in casual clothes.

Core subjects such as English and Maths are timetabled on the same line and are streamed accordingly to ability. This streaming is also used for Science and Humanities subjects. In all subjects, students know their target grade that is primarily determined by their test results that are taken at the age level just before leaving primary school. Teachers are required to continually monitor and record individual student progress based on these target levels. As students get closer to GCSE exams special classes are formed to intervene and improve student achievement. Adding ‘value’ to a student’s expected level is the goal, no matter what their level.

The school day consists of five 1-hour lessons plus a 40 minute form time as the sixth lesson to end each day. For form time students are grouped vertically for four of the five sessions per week with a range of activities offered including: news and current affairs, reading for enjoyment, assembly, sport, and a quiz.

An attendance roll is taken electronically for each class. If the teacher has not completed the roll within the first 10 minutes someone visits the class with a red card.

The school has a Data Manager who is a non-teacher, but a member of the management team. It is this person’s role to collect and manage data to monitor various targets for achievement, attendance, student behaviour, etc. The Data Manager provides regular updates to the Headteacher and Coordinators and plays a significant role in the interpretation and justification of data for Ofsted inspectors.

The Iceni Academy is not a particularly well-resourced school, although it has banks of computers and a whiteboard with projector/interactive whiteboard in most rooms.
The school experienced an interim Ofsted inspection just a few days before I visited and teachers had different takes on the feedback they received on their teaching effectiveness.

The day at Iceni College proved to be enjoyable and highly beneficial to this study. It provided an excellent insight into a school in transition as a result of the academy process. It also showed how a fairly typical English state school is beginning to experiment with student-directed, research-based learning in the earlier years of high schooling with the view of possibly introducing Projects in the senior years in the future.

**Dereham Sixth Form College, Dereham**

Dereham is a town of less than 20,000 people in the English county of Norfolk, situated some 25 km west of the city of Norwich. Dereham Sixth Form is a specialist senior secondary school much the same as Marden Senior College, my school in South Australia. The term ‘sixth form’ is an older reference to the sixth level of high school that is still commonly used to describe students doing their A-levels. The college has approximately 400 students, with about 200 in each year level - Year 12 (AS level) and Year 13 (A-levels). Students are primarily from a white British background and live rurally. They must come from the local comprehensive secondary schools and achieve a minimum of 5A*-C grades.

Derehem 6th Form College main buildings

Dereham Sixth Form College, as a trial school for the Extended Project, was an ‘early adopter’ of project learning. They only offer the Level 3 Extended Project and it is an increasingly popular subject, with 91 students enrolled this year. The Extended project is an accepted and valued qualification for A level students.

The college uses a window of time from April to late September for students to undertake their Extended Projects. This way it does not clash with the A-level exams held in May/June the following year. Students start a month before AS exams, break for exams, and return post exams for a program focused on the Extended Project leading up to the long summer break.

There is no dedicated timetable time allocated to the Extended Project as it is each Form teacher’s role to be the Extended Project Supervisor for students. There are 14 Form teachers with approximately 4-7 Extended Project students in their group. Every effort is made to match the students with a Form group teacher who has expertise in the field that each student is investigating. Students are required to have a minimum of four meetings with their supervisor, and also maintain
contact via email, etc. The main ‘taught element’ of the program is during a focused program conducted in June following the exams. The program includes a day hosted by staff at the University of Herefordshire followed by two skill days back at the college. Following the focused program and more intensive work on their project in July, students are expected to use the long summer break to write-up their projects and prepare the presentation. Projects are then completed in the month or so after students return from break.

Presentations are undertaken on a specified day in September to an audience. The core of the audience consists of the Form group teacher and other group members who are doing the Extended Project. Each student presents to the group for 8 minutes and this is followed by a question and answer session. It is expected that each student asks a question following each presentation. AQA, the awarding agency used by the college for the Extended Project, emphasises that the presentation should not focus too heavily on the product but address the research process.

As emphasised by the Project Coordinator, Jenny Almond, the college values independent student learning in an adult learning environment. Student participation in the Extended Project is voluntary and if they lag behind/lose interest then they are free to withdraw from the subject. One factor contributing to why students tend to value the subject is because it aids their chances of getting into university by contributing to UCAS points and providing students with something to discuss at university entry interviews. Another benefit for students and university entry prospects is that for some students it is the only ‘extra’ that students need to do to fulfil the AQA Bacc.

Interestingly, in the previous year, the college attempted to make the Extended Project compulsory for a small group of students who under achieved at AS level. In order for students to transfer from AS to A levels they must achieve a minimum of 3 D grades in their AS levels. For this small number of students, who only achieved 2 D’s at AS level, it was suggested that they complete a ‘compulsory’ Extended Project over the year instead of a third A level subject. According to Jenny this did not work for two reasons:

- the students were ‘made’ to do something that they had not chosen to do.
- the students by definition were not particularly well motivated or self-directed in their learning (they had already failed one A level) and so the project was not particularly suited to them.

Not making the project compulsory has its merits in this context.

**Haggerston School, Hackney, London**

Located in Hackney, a Northern Borough of Inner London, Haggerston School has approximately 1,000 students, including a 6th Form School that is only in its second year, with 65 students. Hackney has an ethnically diverse population with only 41% of the residents describing themselves as White British in the 2001 census.

The current group of 6th Form students are the first to undertake the Extended Project at the school, and consists of 9 students (8 female, 1 male) under the supervision of Andrea Pomphrey. They are doing the Extended Project with the Edexcel awarding agency. Students recommended to study the subject were either very capable and able to take the Extended Project as an extra subject,
or borderline students who might benefit from the engagement potential of investigating an area of personal interest.

Haggerston School main entrance and buildings

The current group of students began the project in September 2012 with the intention of completing in January 2014. Timetabled for a one-hour lesson each week students have: progressed through series of skill building lessons, identified a topic and developed a proposal, and at the time of my visit were doing their literature reviews. Students maintain a record of their progress each week on the Activity Log record form provided by Edexcel. Andrea also advises students to maintain an annotated bibliography of sources accessed to provide depth and breadth of analysis in their Outcome, but not for submission as evidence for moderation.

Although a few students withdrew early in the program, it is proving to be a positive experience for those continuing and indicators are that up to 70% of next year’s 6th Form entrants are intending to do the Extended Project as part of their two-year A level course.

Part of the reason for the early success of the program is the links with people beyond the school. The school has business mentor arrangements with local firms (laws firms, banks, etc.). From Year 10 onwards each student has a business mentor to guide students as required. The current students are benefitting greatly from the involvement of their mentor in their Extended Project. Andrea has also established a connection with Rugby School through links with Dr John Taylor and Edexcel. Extended Project students from Haggerston link online with Rugby students for 15 minutes a week to share progress and insights. These links with business mentors and Rugby School are clear strengths in the current Haggerston program. It would be interesting to check up on the situation at this school in five years time.
WALES

The WJEC, formerly the Welsh Joint Education Committee (WJEC), is an awarding body that provides examinations for Welsh students and others throughout the UK. They also produce a range of educational resources in English and Welsh. The WJEC offer similar qualifications as their English counterparts, including Level 1, 2, and 3 Projects. WJEC also offer a Welsh Baccalaureate.

Projects

Approximately 500 students, from schools in Wales and England, undertake the Level 3 Extended Project with WJEC. They also award the Level 2 Higher Project to a similar number of students, and about 300 students the Level 1 Foundation Project. The numbers for the Extended Project are increasing with new schools coming on board each year. According to Tessa Gabriel-Davies, Subject Officer of Project qualifications at WJEC, schools initially tended to encourage gifted or more able students to undertake the Extended Project, but increasingly the full range of students are undertaking the subject. Tessa also noted that they have a significant number of group projects undertaken. The Extended Project is increasingly seen as a valuable learning experience to better prepare students for their future at university or elsewhere, and as a means of engaging them in their learning.

Although some centres undertaking the Extended Project with WJEC are from Independent or selective schools, the majority of students are from state run compulsory or secondary modern schools, as shown in Figure 12 below.

Figure 12: Students resulted in Extended Project at WJEC by type of centre (school) – Summer 2010 to 2012.

<table>
<thead>
<tr>
<th>Types of Centres</th>
<th>Summer 2010</th>
<th>Summer 2011</th>
<th>Summer 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comp or Secondary Modern No. &amp; (%)</td>
<td>151 (67.4)</td>
<td>273 (52.4%)</td>
<td>254 (46.9%)</td>
</tr>
<tr>
<td>Independent or State Selective</td>
<td>4 (1.8%)</td>
<td>14 (2.7%)</td>
<td>19 (3.5%)</td>
</tr>
<tr>
<td>Sixth Form / Tertiary</td>
<td>69 (30.8)</td>
<td>209 (40.1)</td>
<td>191 (35.2%)</td>
</tr>
<tr>
<td>Others</td>
<td>0</td>
<td>25 (4.8%)</td>
<td>78 (14.4%)</td>
</tr>
</tbody>
</table>

Source: Data provided by WJEC

WJEC were accredited as a provider of projects a year later than the other three English agencies by the regulator (Ofqual). Due to the one-year lag, tighter conditions were imposed on WJEC to more closely monitor student progress. The main additional documentation demands are: students must submit their project title to WJEC for approval*, students must record evidence of what they learnt from the taught element of the course, a witness statement form must be included for the oral presentation, and evidence for assessment cannot duplicate other subject work. The WJEC specification recommends 45 guided learning hours, more than any other agency. It seems that the regulator perceived that unnecessary flexibilities occurred in the first year of implementation prior to WJEC accreditation.

* Titles must be approved at least 6 months before the final submission of the Extended Project. After one year, if there is a WJEC trained ‘Project Title Approver’ at the school, titles may be approved at the school.
These additional layers aside, the learning and assessment requirements for the WJEC Level 3 Extended Project are very similar to those of the three English Boards. This is evident in the following materials students submit for assessment by WJEC:

- Extended Project Title Approval form
- Extended Project Proposal
- Extended Project Record
- Extended Project Supervision Meetings
- Extended Project Outcome
- Extended Project Presentation

WJEC, in the same way as indicated by other agencies and teachers consulted in England, prefer the evidence submitted for moderation within a single Extended Project File containing the elements listed above. They too accept additional evidence in the form of appendices and other deviations from the proformas provided.

WJEC manage moderation in a similar fashion to AQA, Edexcel and OCR, although, probably due to its smaller student cohort undertaking projects, schools send materials to WJEC rather than directly to the moderator. A sample of students is identified by WJEC for moderation based on the teachers’ results submitted. The smallest sample being 20 students, or all students for groups of 20 or less. WJEC conduct standard-setting meetings and establish benchmark student work at various mark/grade points to underpin moderator standards. Although moderators work independently, the Principal Moderator becomes involved if a marks shift is needed.

In discussing the challenges in the assessment and moderation of Extended Projects, Tessa identified the following:

- Guiding teachers to mark holistically and not analytically
- Improving teacher documentation to better indicate assessment decisions for moderator use
- Continuing to grapple with the challenges of students working on group projects providing individual evidence for assessment and moderation.

As shown in Figure 13 below, enrolments in the Extended Project continue to increase at WJEC and this reflects the situation in England. It appears that the subject is increasingly being valued by students, the wider community (including universities), and schools and teachers. Evidence also suggests that teachers are increasingly becoming more confident teaching and assessing the subject. The data also shows that the Extended Project is proving more appealing to female than male students.

**Figure 13: Students resulted in Extended Project at WJEC by gender – Summer 2010 to 2012.**

<table>
<thead>
<tr>
<th></th>
<th>Summer 2010</th>
<th>Summer 2011</th>
<th>Summer 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. &amp; % of Females</td>
<td>124 (55.4%)</td>
<td>272 (52.2%)</td>
<td>348 (64.2%)</td>
</tr>
<tr>
<td>No. &amp; % of Males</td>
<td>100 (44.6%)</td>
<td>249 (47.8%)</td>
<td>194 (35.8%)</td>
</tr>
</tbody>
</table>

Source: Data provided by WJEC
NOTABLE FEATURES FROM ENGLAND AND WALES

- England and Wales have national qualifications that are regulated centrally, but at least four awarding bodies offer the curriculum and assessment to schools/centres, in competition
- The national government plays a lead role in the direction of school education and data driven accountability, with measurement of student academic progress, examinations at various year levels, leagues tables, inspectors, etc. being key drivers. Increasingly regionally controlled schools are being converted into academies that have less regulation and are ‘out-sourced’ to private operators.
- Apart from the 100% school assessed Extended Project, externally set examinations dominate the assessment of other qualifications and this is being further strengthened through current A-level reforms.
- A suite of projects were introduced in England in 2008 at the GCSE (Years 10-11) level as Level 1 Foundation Project and Level 2 Higher Project, and at the A-level (Year 11-13) as a Level 3 Extended Project.
- The learning and assessment requirements for the Level 3 Extended Project is similar to the Research Project in South Australia, yet is designed for a program twice the duration (i.e. 120 hours compared to the 60 hour Research Project program).
- The Level 3 Extended Project is equivalent to the Research Project and has experienced rapid growth in popularity over its first four years. The growth can be attributed to some highly ranked schools such as Rugby getting involved, and universities valuing Extended Project learning. Initially projects tended to be seen as best suited to talented students and more academic schools, but the rapid expansion is inclusive of a broader cross section of schools and students.
- The Extended Project is more popular with female students who, as with the Research Project in South Australia, outperform their male counterparts in the results.
- Although there have been no structural changes to the learning or assessment requirements of the Extended Project over the four years since its inception, the volume of evidence required of the students for assessment has been reduced and greater clarity of the materials required has emerged through the provision of booklets by the awarding agencies to guide students in the evidence required.
- Schools employ different delivery models ranging from undertaking the taught element over an intensive period followed by independent student learning to a timetabled subject over a 15-month period.
- Assessment is based on common criteria and evidence is marked holistically rather than isolated elements such as the proposal, planning and development record, outcome evaluation, and presentation.
- The importance of students selecting an appropriate research topic was reinforced. Interesting that WJEC have a process for ‘approving’ each students research title.
- The growth and enthusiasm for the Extended Project appears to be against the tide of valuing examinations to measure achievement and the use of achievement data for teacher and school accountability purposes.
INTERNATIONAL EDUCATION

Some of the world’s biggest international education operations are based and/or originated in the UK. I was fortunate to be able to establish contact with, and visit, two leading organisations: Cambridge International and International Baccalaureate (IB).

Cambridge International Examinations (CIE)

Cambridge International Examinations organisation claims to be the world’s largest provider of international education programmes and qualifications for 5–19 year olds. For 14-16 year olds they offer the Cambridge IGCSE (International General Certificate of Secondary Education) and the Cambridge O Level, and for 16-19 year olds they offer Cambridge International AS and A Level for international schools or the Cambridge Pre-U. As with the GCSE and A-levels offered in the UK, subjects are not grouped together for students to receive a certificate of education. Students receive an IGSCE qualification for each subject they complete. Having said this CIE have recently developed a Cambridge Pre-U Diploma that includes a unique form of project learning as a core component.

IGCSE

The IGCSE, a programme for 14-16 year olds, includes a qualification called Global Perspectives. The Cambridge IGCSE Global Perspectives course offers a distinct approach to research-based, self directed learning aimed at developing students ability to think critically about a range of global issues stretching across subject boundaries. Available for teaching for the first time from September 2009, Global Perspectives has rapidly increased in popularity with nearly 60 centres (schools) taking it. Countries undertaking it include China, Kenya, Denmark, Indonesia, Malaysia, Cyprus, Mexico, Brazil and New Zealand.

Rather than focus on the acquisition of knowledge, Global Perspectives focuses on the development and application of skills, including independent thinking, learning and communication. A list of topics that contain issues of global importance is provided in the syllabus from which students can choose. Topics include, for example: Climate Change, Conflict and Peace, Trade and Aid. Students are expected to explore topics from different perspectives: personal, local/national and global. As summarised in Figure 14 below Global Perspectives consists of three components: individual research, group project and written paper.

Figure 14: Components of Global Perspectives

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Evidence assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Research (&lt;40%)</td>
<td>Candidates carry out research based on two topic areas and submit an Individual Research report on each topic.</td>
<td>Two research reports (if text) 1500-2000 words. May be multimodal.</td>
</tr>
<tr>
<td>Group Project (&lt;30%)</td>
<td>Working in groups of 3-4, students investigate one topic (must be different from the topics chosen for Individual Research). Two parts: a group element and an individual element. Group element (worth 33%)</td>
<td>Group element - 1500-2000 words. May be multimodal. Individual element - 1500-2000 words. May be multimodal.</td>
</tr>
</tbody>
</table>
work together to write a project plan, carry out research and produce an outcome.
must show evidence that they have collaborated with others from another culture, community or country.

Individual element (worth 67%)
Each student produces his/her own evaluation of the Group Project that focuses on:

- the project plan and process
- the project outcome
- their own contribution to and learning from the project, including cross-cultural collaboration

| Written paper (30%) | Externally set paper based on a range of sources provided with the paper. Sources will present global issues from a range of perspectives. The paper focuses on topics listed in the syllabus. | 1 hour and 15 minutes. Questions require both short answers and longer written responses. |

Source: Adapted from Cambridge IGCSE Global Perspectives Syllabus

The Global Perspectives Syllabus offers a scaffolded introduction to independent research skills and includes a range of assessments that include an external examination, group and individual work and variation between discrete ‘bite sized’ assessments to more extended activities. It presents an interesting compromise that may well suit male students more so than the other projects examined to this point. Global Perspectives raises interesting possibilities for the newly developed Year 11 SACE Research Practices subject.

Cambridge Pre-U Global Perspectives and Independent Research Report

The Cambridge Pre-U is a new qualification that was launched in 2008 as an alternative to the A Levels in the UK and internationally. It is a two-year qualification designed for 16-19 year old students that can be done as a one year AS level, or a two-year A level. By taking any specified subjects, and Global Perspectives and the Independent Research Report (GPR), students can be awarded the Cambridge Pre-U Diploma. It is the GPR with its Research Project equivalent that is of most relevance to this study.

Global Perspectives and Research (GPR) can either be taken as the compulsory core component of the Cambridge Pre-U Diploma, or as a stand-alone qualification. As with the IGCSE Global Perspectives there has been a significant growth in the number of international schools taking the GPR. The GPR consists of two articulated components that are examined separately:

- Global Perspectives – to develop creative, critical thinking and responsible awareness through the tackling of global issues
- Research Report – offering focused personal exploration and increased depth of study
The GPR is designed to span over two years, starting with Global Perspectives and then the Independent Research Report in the final year.

Global Perspectives has a clear international focus built around a series of topics organised into five broad themes: ethics, economics, environment, technology, politics and culture. A school programme should include at least four topics, each from a different theme. Students explore each topic, under the direction of the teacher, following a critical path marked out by the following stages: deconstruction, reconstruction, reflection, and presentation. Assessment of Global Perspectives consists of components, as shown in Figure 15 below.

Figure 15: Components of the Global Perspectives part of the Cambridge Pre-U Global Perspectives and Research Report Qualification

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Evidence assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deconstruction (25%)</td>
<td>Externally set paper comprising of one or more sources for critical and comparative analysis.</td>
<td>Externally assessed written paper. 1 hour 30 minutes.</td>
</tr>
</tbody>
</table>
| Reconstruction and Reflection (30%) | Based on one of the topics the student studies. Students:  
• identify two alternative perspectives and explore evidence to support each  
• evaluate and suggest ways forward in the debate  
• reflect on their own perspective as a consequence of the enquiry | Externally assessed essay. Submitted electronically. Maximum 1500 words. |
| Presentation (30%)          | Students base their presentation on a question that engages directly with an issue. | Externally assessed multi-media presentation. Recorded and submitted electronically. Maximum 15 minutes. |

Source: Cambridge Pre U Global Perspectives and Independent Research Syllabus Outline.

There are similarities between the IGSCE and Pre-U Global Perspectives programmes, including a source analysis examination in both, yet there are clear points of difference with the Pre-U version not including group work in the assessment. Each of the three elements of the higher level Pre-U version is externally assessed, including the students Presentation.

Following Global Perspectives in the Pre-U programme, students undertake the Independent Research Report in the second year of the GPR. This is an opportunity for students to choose their own topics to dig deeper into a chosen specialisation or interdisciplinary enquiry, or study a matter outside of existing school subjects. Students present a 4,500 to 5,000 word report whose nature and format will be most appropriate to the subject of enquiry. Assessment focuses on the ability to:

• design, plan, manage and conduct own research project  
• collect and analyse information  
• evaluate and make independent, reasoned judgements  
• communicate findings and conclusions  
• demonstrate intellectual engagement with the subject matter of the research.
As can be seen the first four assessment criteria are very similar to other projects considered in this study, and the Research Project. The last criteria, seeking intellectual challenge is an interesting addition and may present a challenge to assessors. The Cambridge Pre-U Research Report and the International Baccalaureate Extended Essay have much in common.

**International Baccalaureate**

The following is a summary of the information and materials provided at a meeting with personnel from the International Baccalaureate Assessment Centre, Cardiff. The International Baccalaureate (IB) offer two programmes at a senior secondary level: the IB Diploma Programme (DP) and the IB Career-related Certificate (IBCC). These are taken by students worldwide over two years. The IB Diploma is an academically challenging program designed primarily to prepare students for university, whereas the IBCC is primarily designed to prepare students for employment, and vocational and training pathways, while also enhancing the curriculum fit for progression to undergraduate courses. Both the Diploma and IBCC have a form of extended project learning as part of the compulsory core. Firstly, I will consider the Diploma.

**IB Diploma Programme - Extended Essay**

The DP is normally taught over two years with students doing six subjects from set subject groups. In addition, the program has three core requirements: completion of an Extended Essay, undertaking a Theory of Knowledge course, and participating in Creativity, Action, Service. These three components are included to broaden the educational experience, to develop complementary skills, and to challenge students to apply their knowledge and understanding.

Of particular interest in this study is the Extended Essay (EE). The EE was designed for students to engage in independent research through an in-depth study based on a question usually relating to one of the subjects they are studying. The EE is intended to be completed in 40 hours, with students submitting a formally presented, structured piece of extended writing of no more than 4,000 words towards the end of their second year of study, and before examinations commence. Some centres also include a short, concluding interview, a *viva voce*. The *viva voce*, when completed, tends to be referenced in the supervisor report which appears on the coversheet of the essay, and helps the examiners assess against criterion K: holistic judgment.

Currently approximately 60,000 students undertake the EE worldwide as part of the DP, and from May 2014 it will also be available as a ‘stand alone’ qualification for students who are not taking the full DP. Students choose their own research topic, but do so from a list of approximately 60 (plus a number of special request languages) approved subjects, based on the list of existing IB DP subjects available for the session in question. In May 2013, the World Studies subject was added to this list as mainstream offering.

Even though 2013 is the first year of World Studies, it has already proven attractive to students, and is the eighteenth most popular topic, with History (almost one quarter of the students submit an EE in History) being the most popular. This is in keeping with SACE Research Project experience where
many students are choosing an issue of local relevance to research, often with social and global relevance. World Studies offers flexibility for students to investigate a topic of interest beyond a single IB diploma subject - a clear attraction. However, undertaking the Extended Essay under the World Studies banner does have other demands. Students are to draw upon theories, findings and methods from two or more IB diploma subjects; and the chosen topic must be of contemporary global significance. In this way, World Studies provides an interdisciplinary option for students, preparing them for the numerous interdisciplinary courses offered at university level.

The comparative achievements of male and female students proved revealing. Based on the History Extended Essay results data there is no significant achievement gap between the genders. This is against the trend of females outperforming the males as evident in the South Australian and UK data. This lends support to the view that males prefer to focus on the product or goal, rather than the process.

The EE is assessed against 11 common criteria that also offer subject-specific interpretation. The criteria, with marks allocated, are presented in Figure 16. Note how the 36 marks are allocated in a very analytical fashion, often against specific sections of the essay, starting with two marks available for criterion A (research question). The essays are presented in paper form (although electronic submission is earmarked for the future, with a selection of EE subjects being trialled in May 2014) with a cover completed by the teacher/supervisor that includes a section to communicate the student’s performance. This is particularly relevant to the last criterion K (holistic judgment) where evidence from the viva voce can influence the mark allocated by the teacher.

<table>
<thead>
<tr>
<th>Figure 16: Extended Essay Assessment Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion</td>
</tr>
<tr>
<td>A: research question</td>
</tr>
<tr>
<td>B: introduction</td>
</tr>
<tr>
<td>C: investigation</td>
</tr>
<tr>
<td>D: knowledge and understanding of the topic studied</td>
</tr>
<tr>
<td>E: reasoned argument</td>
</tr>
<tr>
<td>F: application of analytical and evaluative skills appropriate to the subject</td>
</tr>
<tr>
<td>G: use of language appropriate to the subject</td>
</tr>
<tr>
<td>H: conclusion</td>
</tr>
<tr>
<td>I: formal presentation</td>
</tr>
<tr>
<td>J: abstract</td>
</tr>
<tr>
<td>K: holistic judgment</td>
</tr>
<tr>
<td>Total marks</td>
</tr>
</tbody>
</table>


The IB Organisation works with approximately 950 examiners in a May examination session who undertake marking of the EE, each specialising in a specific subject (e.g. history). Examiners generally mark 60 scripts each as a standard allocation and are often university personnel or Diploma Programme teachers. All EE subjects are headed by one subject manager who oversees standards and conducts a grade award meeting and produces a grade award report. Each EE subject has a Principal Examiner whose marking becomes the standard for the subject in question. Principal Examiners have the task of drafting subject reports on the session, and selecting exemplar materials.
The grade boundaries are fixed for the lifetime of the curriculum iteration. The EE will be revised for first teaching May 2016 (and first assessment in May 2018). Assessment sessions are conducted twice a year, with the largest being in May. On average, students score 20 out of 36 for the EE, which is a grade C.

**IB Career-related Certificate (IBCC) – Reflective Project**

As mentioned above, the IBCC is more flexible than the IB DP and caters for students beyond university aspirants, and is designed to support and complement student career-related studies. The IBCC framework consists of at least two DP courses, an IBCC core (comprising a Community and Service element, an Approaches to Learning course, a Language Development aspect, and the Reflective Project (RP)), and career-related studies beyond the IB (such as a VET certificate/VET competencies) organised at a local level. The IBCC core includes a Reflective Project, the aspect of interest to this study.

The Reflective Project (RP) is an in-depth body of work produced over an extended period based on an issue of interest to the student, arising from their career-related study. It focuses on an ethical dimension of the issue, more so than the issue itself, as a piece of personal research under the supervision of an allocated member of staff, a ‘supervisor’. For example, a student planning a career in recreation may investigate the banning of jet skis by local authorities.

The project involves the following aspects:

- Identification of an issue
- Examination of the ethical dimension associated with the issue
- Research of differing viewpoints on the ethical dimensions
- Evaluation of the different viewpoints and articulation of their own point of view

It is also recommended that students include what is called a ‘reflection space’ where they provide evidence of their thought processes in the form of a journal or blog. This reflective space values the process over the final product and is one of the distinguishing features between the reflective project and the extended essay as it stands currently. The project can be submitted as a written formal essay of 3000 words or an equivalent in multimodal form.

Reflective Projects are marked by the supervisor and quality assured by the IB who requests a sample for external moderation. Ten assessment criteria are used to arrive at a final mark out of 30 as shown in Figure 17 overleaf.
Figure 17: Reflective Project Assessment Criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Maximum Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: the issue in context</td>
<td>3</td>
</tr>
<tr>
<td>B: community awareness</td>
<td>3</td>
</tr>
<tr>
<td>C: the ethical dimensions of the issue</td>
<td>3</td>
</tr>
<tr>
<td>D: cultural awareness</td>
<td>3</td>
</tr>
<tr>
<td>E: reasoning</td>
<td>3</td>
</tr>
<tr>
<td>F: supporting evidence</td>
<td>3</td>
</tr>
<tr>
<td>G: student voice</td>
<td>3</td>
</tr>
<tr>
<td>H: reflection</td>
<td>3</td>
</tr>
<tr>
<td>I: communication</td>
<td>3</td>
</tr>
<tr>
<td>J: presentation</td>
<td>3</td>
</tr>
<tr>
<td>Total marks</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: IB Career-related Certificate, Core Guide for use from August 2012

The RP is designed for students to undertake an investigation into an issue that is relevant to the world of work and their chosen vocational pathway. According to the subject manager, there is still room for improvement in the quality of the topics selected by students, though this should improve as schools continue to familiarize themselves with the offering. To meet the intent of the RP, and be rewarded in the marking, the ideal topic should focus on a contentious issue with multiple perspectives and an inherent ethical dilemma element. Even though there was a 2-3 year pilot period, it was only officially available to centres as a mainstream offering from September 2012.

Future developments

As part of the normal seven-year review process, the RP has undergone significant reform and the EE is proposing a major change to the assessment criteria. These proposed changes are currently being piloted and will be implemented in 2016 worldwide for first teaching. The two major proposals for change to the assessment are the introduction of a process criterion for the EE, and the adoption of a more combined analytical and global impression marking, resulting in fewer criteria for the EE than the current eleven.

The proposal is to assess the process through the introduction of an ‘Engagement’ criterion to the Extended Essay. Whilst not confirmed, this criterion will be worth between 15% and 18% of the final score. Students will be rewarded for reflecting on the process and planning involved in undertaking the EE and will be required to provide evidence to their supervisors in a ‘reflective space’. To structure this, three supervision points are to be mandated: an early-reflection and a mid-reflection using a recording pro-forma, and the final viva voce. The onus will be on the student to prepare evidence of this reflection that the teacher signs off.

Currently 11 criteria are used to mark the Extended Essay, with many of the criteria judged from evidence in a specific section of the essay (e.g. introduction, conclusion). This is to be reduced and will encourage less compartmentalized marking in favour of a more holistic or global impression assessment of the essay. This will provide larger criterion, worth more marks. An example is the introduction of a ‘critical thinking criterion’, from which evidence can come from all sections of the essay. The primary aim is to place higher value on deeper critical thinking over description and the...
expression of this in different ways by the student. Although the new marking scheme does not go all the way to global impression assessment, it represents a move in this direction. Associated with the new criteria and marking shift will be a move towards the use of mark bands.

Overall, the IB project equivalents, the Extended Essay and the Reflective Project, continue to be a valuable facet of the IB curriculum. It was fascinating to learn how these are implemented and assessed on a global scale, and interesting to see the future directions in mind.

**NOTABLE FEATURES FROM INTERNATIONAL EDUCATION AGENCIES**

- Projects are a compulsory requirement in both IB programmes (academic and career focus) and CIE programmes.
- Final year ‘pre-university’ projects at both international organisations rely on an academically written outcome of approximately 5,000 words for assessment.
- The CIE Global Perspectives raises interesting possibilities for the newly developed Year 11 SACE Research Practices subject. Rather than focus on a single topic or piece of research, it breaks the program into a number of topics and varied assessments including a source analysis style examination, and a group project, or multimodal presentation. In this way more specific research skills can be assessed and possible concerns about assessment reliability overcome.
- By providing a two-year program, Cambridge Pre-U acknowledges the need for students to build skills before undertaking self-directed research through the GPR that spans over two years, starting with a more scaffolded, skill building Global Perspectives and then the Independent Research Report in the final year.
- Students undertaking the CIE’s Independent Research Report have free choice of a topic of interest to research, whereas in the IB Extended Essay they nominate an IB listed subject area before choosing their topic.
- Changes to the IB Extended Essay will see the introduction of a ‘reflective space’ for students to include evidence of process that will be rewarded in reforms to the assessment.
- Although based on limited data, there appears to be no significant variation between the achievement of males and females in the IB’s product assessed Extended Essay. One conclusion could be that males perform better when the focus is on the product or outcome of the research, less so than the process. It will be interesting to monitor results data for the Extended Essay after the assessment of process is introduced.
- The IB is moving from less analytical marking of the Extended Essay to more holistic marking using a reduced number of criteria. This will align it more closely with other Projects.
- CIE’s four staged description of research (deconstruction, reconstruction, reflection, and presentation) provides an interesting frame to structure student research and programmes.
UNITED STATES OF AMERICA

The United States of America (USA) has approximately 313 million inhabitants; by far the most populous nation considered in this study. It consists of 50 states, each with its own constitution and education systems.

The United States has a strong public school system with significant involvement of each state government in education. Students enter high school as Freshmen in Year 9 (generally 14 year olds), they become Sophomore in Year 10, Junior in Year 11 and Senior in Year 12. In the senior year, the year of graduation, students are generally 17 or 18 years of age.

Federal and State involvement in Education

The following four paragraphs are an ambitious attempt to summarise federal involvement in US education - a complex and contentious matter.

Federal influence over education increased significantly with the introduction of the No Child Left Behind Act (NCLB) in 2001, by the Bush Administration. The Act introduced goals for national education based on regular testing to monitor and improve individual student outcomes. This was in response to concerns that students were not career and college ready, and that the most needy were being left behind. The Act requires states to develop assessments in basic academic requirements (literacy and numeracy) and apply these to students at Grades 3-8 and Grade 11 in order to receive federal school funding. Each state now selects or develops its own tests and collects data as an accountability measure. In this way, each state, it would appear, has the autonomy to set the standards that determine student success or proficiency, yet tied to this are funding and school accountability implications.

Federal control further increased (post the NCLB policy) with the introduction of the Common Core State Standards. The Common Core State Standards have been voluntarily adopted by 46 states. Technically speaking the Standards were not a federal government directive, as they were initiated and developed by a coalition of state governors and others. However, the Obama Administration supports this state led initiative. The Common Core State Standards, like the Australian Curriculum, is an attempt to map the curriculum nationally. In fact the staged development and timeline of the US Core Standards is similar to the Australian experience. The Common Core State Standards are designed to be clear benchmarks to measure and compare student achievements across the US from K to 12. Initially standards were developed for the core areas of literacy and numeracy, or more specifically, a standard for the end of each year level (K to 12) in English Language Arts (ELA) and Mathematics. Standards are now being finalised for the other curriculum areas, with science standards released on 10 April 2013 during my stay. Although aspects of the Common Core State Standards may be contentious, the more controversial aspect is how they are to be measured.

Currently, it appears that each state is setting tests for the various year levels, or as is the case in Rhode Island, a collection of states (in their case New England) have pooled resources to design tests. Some states have made the transition to the Common Core State Standards and are already setting tests against these standards. Either way, all states are using tests, generally in multiple choice form with a few short answer questions, to measure student achievement at the end of each
year. Results from these tests are gathered by school districts and state administration as an accountability measure on the school and the individual teacher. The stakes are high for a school as substandard scores lead to low rankings, probation and possibly a forced takeover.

A recent development is the emergence of national tests aligned with the Common Core State Standards. Two consortia are developing online tests and the majority of states are signing up to administer them. These tests are set at the standard of the particular year level, but apparently will lead the student through customised layers depending on success in answering questions as they progress. Online tests are proving expensive to design and pose significant technology challenges for schools and districts.

In summary, standardised testing and data driven accountability are significant forces to emerge in the US educational landscape over the last ten years. It seems that the federal government may have worthwhile initiatives, but the complexities arise in the interpretation and implementation by states, districts and eventually schools. The stakes are high however, as funding, public perception of a school, and teacher tenure are all in play.

Graduation Requirements

High school curriculum and graduation requirements in the United States are not nationally mandated, but are determined at a state level. Each state’s education board typically provides a set of requirements that commonly consist of a designated number of courses and credits required for a student to graduate. This credits based structure is based on Carnegie Units have been widely used across USA for over 100 years. Within a common creditunit framework, individual school districts generally have some scope to tailor their specific diploma requirements. For example, North Carolina local school districts may require students to successfully complete extra course and credit requirements, such as a graduation project, on top of the state requirements to earn a high school diploma (See Figure 18).

Figure 18: High School Graduation Requirements for North Carolina

<table>
<thead>
<tr>
<th>21 Core Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 4 credits of English</td>
</tr>
<tr>
<td>• 4 credits of Mathematics</td>
</tr>
<tr>
<td>• 3 credits of Science</td>
</tr>
<tr>
<td>• 3 credits of Social Studies</td>
</tr>
<tr>
<td>• 1 credit each of Health and Physical Education</td>
</tr>
<tr>
<td>• 6 credits of Electives: include Career or Technical, JROTC or Arts Education</td>
</tr>
</tbody>
</table>

Plus any additional courses and credits that some districts and schools may require students to successfully complete, such as a graduation project or other assignment to earn a high school diploma.

Source: Public Schools of North Carolina website

College and university entry

Unlike Australia where Year 12 results play a major role in university entry, students have generally been accepted into college or university before they have completed high school. This is because colleges and universities have long relied upon standardized measures, such as the achievement and aptitude tests, ACT and SAT respectively. Some institutions also consider other factors of evaluation
such as class rank, GPA, and extracurricular activities. However, students must meet the state specified graduation requirements, as determined in their last year of secondary school, to be successfully admitted. The last ten years have seen an increase in the complexity of college entry and the cost of a college education, yet at the same time there is a federal push through Obama’s ‘Race to the Top’ for all students to be able to have a college education.

A range of tertiary options are available for students, including two and four year colleges, and private and public institutions. The most prestigious universities, renowned for their academic standards and selective admission, are called the Ivy League group. The Ivy League consists of eight institutions: Yale, Brown, Columbia, Harvard, Princeton, Pennsylvania, Dartmouth, and Cornell universities.

Year 11, or the Junior Year, is the most significant year for students in terms of standards and high stakes tests. The lag in time between students completing entry tests and Year 11 assessments, and graduation is sometimes described as ‘senioritis’ in reference to the potentially less purposeful passing of time in the last year of high school. It is in this environment that students may or not undertake projects.

Projects

The concept of requiring seniors to complete a culminating project is accredited to the Far WEST group in Oregon, 1986 (Program Evaluation Division of North Carolina General Assembly, 2010). The group trademarked the Senior Project® model. The Senior Project® model involves students choosing a topic of interest to complete 4Ps: paper, project, presentation, and portfolio. Initially this was designed to be part of senior English courses. The Senior Project® Centre is a commercial body that advocates projects as a pivotal requirement in the senior year and provides training, assistance and resources to schools and the school systems that implement the project.

The title ‘senior project’ and ‘capstone project’ appear to be used interchangeably in different states, and may alternatively be referred to as ‘culminating project’. Senior projects or capstone projects generally refer to projects resulting from learning in the senior year or throughout high school, whereas culminating projects are expected to include learning obtained over a longer period of time.

As mentioned above, student results in final year assessments are not directly used to determine entry into tertiary education. Due to the reduced external emphasis placed on school performance for US high school seniors, the second semester is seen by some as ‘intellectual deaths of our seniors’ (Gardner, 2011). Projects therefore, potentially provide an authentic learning and assessment experience that can add engagement and rigour to the final year of high school. They are also seen as a way of fulfilling the national imperative of incorporating 21st century skills (e.g. entrepreneurship, self-enrichment, jobshadowing/career explorations, volunteerism, physical product, etc.) into curricula to prepare students for post-secondary education, the workforce, and society.

To accurately establish the uptake of projects across the US is a difficult task. According to Senior Project® Center only one state has no known senior project programs (See Figure 19). The vast
majority of the states leave the decision as to whether or not to include projects in graduation requirements to individual schools and districts. Although a number of states are in the process of reviewing and creating new high school graduation requirements, ‘few states have mandated a senior capstone project as a graduation requirement’ (Skeldon, 2012, p43).

Figure 19 suggests the uptake of senior projects is widespread throughout the United States, however, as mentioned above the reality is difficult to quantify as practices in each state, district and perhaps each school has some autonomy in regards to the inclusion, or not, of senior projects. Secondly, the form of senior project appears to vary greatly in depth and breadth. Although senior projects generally include key elements of written and oral communication as well as an exhibition, there are other significant differences. For example, in some cases students are required to undertake culminating projects that include learning obtained over a long period of time, perhaps encompassing their entire kindergarten through 12th grade experience. Given this significant variation, my approach has been one of focusing on case studies at a State level, rather than attempting to grasp the situation nation wide.

Under the banner of performance assessments, projects along with portfolio and other assessments, form the alternative to examination assessments. The emerging value being placed on high stakes standardised testing, with national funding tied to performance in standardised test scores, raises the question about the status of performance-based assessments such as senior projects. The tension between standardised testing and valuing project-based learning was a common topic of discussions with educators during my study tour. The feasibility and status of project-based learning, particularly on a state-wide basis, may be losing some impetus due to the increased reliance upon high stakes testing and accountability as indicators of successful completion of high school. Having said this, educators I spoke with in Rhode Island, North Carolina, and Connecticut, were in no doubt of the value of senior projects for students and have every intention to continue to enhance and support good senior project practice.
CASE STUDIES

This study focuses on the implementation of projects in three states: Rhode Island, North Carolina, and Connecticut. Each of these states supports senior projects as part of graduation requirements and is at different stages of mandating projects. Each state provides expectations and guidelines for the implementation and evaluation of projects for schools to follow.

Rhode Island

Rhode Island covers the smallest land area of the US states, and has just over one million inhabitants. A combination of two factors led Rhode Island to be part of this study: it is one of the few states to mandate a project as part of graduation requirements, and email links forged with Rhode Island school principal, Dr. Michael Skeldon, who recently published a doctoral paper titled *Perceptions of Judges Toward Rigor of High School Senior Capstone Projects at a Northern RI Charter School*. My understanding of senior secondary education, and projects, in Rhode Island was primarily shaped by a day spent observing student presentations at Michael’s school, Beacon Charter High School for the Arts, and independent meetings with Betsy Shimberg and Dr. Rosemary Burns. Both Betsy and Rosemary have a deep understanding of education, including senior projects, in Rhode Island. Betsy has only recently been a member of the Rhode Island Board of Regents, the decision-making and advisory body to shape the direction of education in the state. Rosemary until very recently worked in the secondary section of the Rhode Island Department of Education, she is now an Assistant Principal at New England Laborers’/Cranston Public Schools Construction and Career Academy, Cranston.

The Rhode Island Department of Education (RIDE) is the state body that sets policies and strategies for the state’s education from K-20. One of RIDE’s roles is to establish and monitor expectations and standards for the state and they do this through their Basic Education Program. Included in the Basic Education Program are the high school diploma requirements, or graduation requirements. Rhode Island has 36 districts, some with only one or two high schools.

In 2008, Rhode Island became the first state in the nation to mandate performance based graduation requirements (Cech, 2008), and is currently one of the few states to do so. Performance assessments, such as portfolios and projects, provide other forms of evidence, beyond tests, to gauge student achievement. The decision to include, or not include, projects as a graduation requirement ultimately resides with the districts and/or school.

As with most states, to graduate from high school, a student in Rhode Island is required to complete specified coursework. In Rhode Island this includes basic courses (at least 4 English, 4 Math, 3 Science, 3 Social Studies, and Physical Education) and skills in 6 core areas (English, Math, Science, Social Studies, the Arts, and Technology). In Rhode Island however, students are also required to complete two of the following options: comprehensive end-of-course examinations, portfolios, or senior projects. The state therefore values multiple learning opportunities, and multiple measures for determining graduation readiness. Schools have the autonomy to decide the performance assessments to use as a graduation requirement. Further to these requirements, from 2014,
students also need to be proficient in statewide (in fact New England wide) reading and mathematics tests.

Therefore, projects are not exactly mandated as a graduation requirement; in reality many schools choose between projects or a portfolio. Portfolios are perceived as a way around doing projects by certain schools and involve students maintaining evidence over many years of various schooling requirements. Interestingly some schools, including Beacon Charter High School for the Arts, require students to complete both portfolios and projects. Over the last few years the state has changed the name of projects to exhibitions, and as of late 2010, about 40% of schools have exhibitions as a graduation requirement.

The form of projects undertaken, including program timing and duration, and curriculum and assessment requirements, are not centrally determined and hence vary from school to school. However, resources and guidelines provided online by RIDE, including exemplar assessment rubrics, shape the projects in the state. Projects in Rhode Island share the following elements:

- students investigate a topic of their choice
- values some form of connection between the student and the wider community
- involve some measurable ‘learning leap’ involving students going deep into a topic or area of interest
- require students to present and verbally defend their product/findings
- value both written and verbal communication elements
  - some form of written work as evidence of the process and/or product
  - a presentation and some form of defence
- assessment is based on a set standard that a student must achieve in order to graduate.

The project is valued as a ‘rite of passage’ where a student exhibits, to an audience beyond the teacher, their skills and preparedness for the next phase in their lives beyond school.

Some schools, such as Barrington Public High School have a proud history of conducting successful senior projects for over ten years, and still do so today with approximately 200 students each year. Somehow they manage to conduct all presentations in one day, each in front of at least five judges.

While in Rhode Island I was fortunate to visit two Rhode Island schools as part of my study: New England Laborers’/Cranston Public Schools Construction and Career Academy, Cranston; and Beacon Charter High School for the Arts, Woonsocket. Both of these schools are charter schools. Charter schools are public schools intended to be models of innovations and best practice. Generally charter schools are set up under a sponsor and are granted a license by RIDE for five years. Charter schools tend to have a specific focus as is evident in the naming of the two schools visited.

**NEW ENGLAND LABORERS’/CRANSTON PUBLIC SCHOOLS CONSTRUCTION AND CAREER ACADEMY**

The New England Laborers’/Cranston Public Schools Construction and Career Academy is a small school of approximately 200 students who enter as 14 year olds for a four year education that couples the development of construction skills (building with different materials, landscaping, paving, etc.) with a comprehensive education. The full range of pathways are open to graduates,
including further training at a specialist post secondary institution within the New England Laborers’ Union organisation to get the valued ‘ticket’ to work in the industry.

The school currently uses the portfolio option, as opposed to projects, to fulfill the state performance assessment graduate requirement. Students are required to maintain a portfolio of materials from across their four years as evidence of a school-developed list of graduate qualities. Students, using a combination of hard copy and electronic materials, must present this evidence across subjects and year levels to graduate. Students explain and defend their portfolios in front of a panel to show their readiness to graduate using examples of their own work. The panel scores students’ presentations based primarily on the quality of the presentations. Although panels review student portfolios prior to presentations, the school has already assessed this aspect of the assessment.

The portfolio process is supported in two ways. Each student is assigned to an Advisory class where two teachers are assigned 15 or so students from the start of Year 9 and follow them through as their class or ‘home group’ teacher. Additionally, all senior or year 12 students are enrolled in a portfolio class that supports the compilation of their graduation portfolio and presentation preparations.

**BEACON CHARTER HIGH SCHOOL FOR THE ARTS, WOONSOCKET**

Beacon Charter High School for the Arts (or Beacon, for the sake of brevity in this report) has been in operation for just over ten years. It offers an academic and arts curriculum to students over a four-year education from Years 9-12. Students are attracted to the school from all over Rhode Island and it receives an excess of applicants each year, with admissions managed by a public lottery.

With about 60 students in each year level and currently 227 students in total, Beacon offers a small school environment and the opportunity for students to be immersed for 20% of their curriculum time in their arts major: theatre arts, visual arts, or culinary arts. It is an award winning school that caters for the full range of students.

Beacon uses both a portfolio and a capstone project as part of each student’s graduation requirements. Students maintain a portfolio of their learning from Year 9, and at the end of each year present this portfolio as evidence of their progress. Unlike a number of other schools, portfolios are not accumulated over the years. In their final year, students are required to do a portfolio as well as their capstone project.
Capstone projects at Beacon differ to most other schools due to the importance placed on the presentation of a short film by each student to exhibit their learning. The film focus is in keeping with the school’s art emphasis and applies to all students whether they are undertaking a culinary, visual or theatre major. Presentation and defence of films leading to graduation is an important part of the school culture.

The Beacon capstone project is a full year program commencing in September after the summer break and concluding with presentations before graduation in the following summer. The first semester program focuses on film making technology and skills, script writing and editing before students work towards developing their own film ideas. Students may choose any topic or style of short film. In the second semester students develop and refine their film and further prepare their portfolio for assessment. A series of progress checks are built into the program (e.g. filmmakers logline, screenplay drafts, storyboard, student reflections) and this doubles as the elements of the portfolio that also includes a summative reflection where the student reflects on the whole capstone process.

Presentations are undertaken in front of seven judges who are typically a combination of people familiar to the student (e.g. teacher, ex-scholar) and less familiar members of the community (e.g. filmmaker, actor, educator, interested community member). In addition students present in front of an audience consisting of the entire senior class. I had the absolute pleasure of observing a presentation day where six students, in turn, introduced and played their film, and then defended their learning by fielding questions from the judges. I experienced six students present totally different short films as their capstone, ranging from a Shakespeare inspired narrative, a personal expose grappling with personality flaws, to a documentary style piece on the power of faith using leaders from a local church. On display were many skills such as screenwriting, technical skills of filmmaking, and acting abilities of fellow class members. Each film was of a high standard and students received strong affirmation from the audience, including standing ovations. Each student articulated their ideas very well and handled praise and probing questions from the judges very well. Students shared personal insights into their growth over their years at Beacon and the journey of making their film. The whole process was very supportive and affirming and a clear rite of passage as students head towards post secondary school life.
The entire project process has significant rigour and impact. There is a clearly stated standard that students are to meet. A rubric with five criteria, adapted by the school from RIDE online support materials, is used to assess students. If, it is deemed below standard (as was the case for a student who presented earlier in the week), the student must re-visit elements in order to graduate. This re-visit is not in front of peers and a panel of judges, but a teacher and one or two members of the school board. Although perhaps not the preferred path from student perspective, it provides assessors better scope to hold the standard knowing that a ‘below standard’ outcome does not guarantee that a student’s high school graduation will be deferred for another semester or year.

Assessment is based on the film and the defence of learning on the presentation day, and a portfolio that is submitted electronically prior to the presentation. Judges have electronic access to each student’s portfolio, and the rubric and advice on how to assess, prior to the day. Each judge awards a mark out of 100 with twenty marks allocated for each criterion. The highest and lowest marks are removed as ‘out-riders’, before an average mark is determined from the scores of five judges. This mark is communicated to the student in a teacher-student meeting after a celebratory lunch provided by some of the school’s culinary students. Any score above 80 is deemed above the standard, and hence enabling of graduation. Presentations are staged over two months, with students placed into three groups and each group allocated a specific week during the period to present.

North Carolina

North Carolina has over 8 million people; the biggest of the states visited for this study, in area and population. A number of North Carolina schools have a long history of students doing senior projects as a graduation requirement and by early 1990s the uptake of senior projects across the state was widespread.

The State Board of Education noted the success of senior projects and, as part of the nationwide high school reform agenda, undertook an investigation into the value of projects to students. Under the banner of more rigorous high school graduation requirements, in May 2005 the State introduced new exit standards to commence for Year 9 students in 2006. This reform mandated that a senior project, to be called the North Carolina Graduation Project (NCGP), was to be part of the graduation diploma for all students. The State developed and provided support materials, including rubrics, and facilitated teacher training. The implementation of the NCGP and its ongoing monitoring was delegated to each school district. However, before the first cohort of students was due to complete the NCGP in 2010, the State issued an amended bill softening the mandated status of the NCGP. Students were no longer required to complete a high school graduation project, but local boards of education ‘may require the NCGP as a local exit standard’.

With this background in mind, I was looking forward to visiting North Carolina to understand the status of the project and observe how it worked in practice. A meeting with Dr Maria Pitre-Martin, Division Director of K-12 Curriculum and Instruction at North Carolina Department of Public Instruction, and a day at Mooresville High School with Nancy Gardner, the capstone project coordinator, and staff and students at the school, shaped my understanding.
Education in North Carolina is organised into 8 regions and 115 local education authorities (LEAs). In bigger cities an LEA may cover ten or more high schools, whereas in smaller regions, such as Mooresville, the LEA services only one high school. It is these functional units that interpret and administer State policy.

Significant education policy change at a State level, such as revisions to high school graduation requirements, is a complex process. It invariably entails debate, redrafting, and negotiation, and the involvement of decision-makers within and outside of government. The ‘un-mandating’ of projects appears to have arisen for two main reasons: doubts about its effective implementation in some schools and the global financial crisis reverberating throughout the USA. The following factors provide an understanding of the insights shared with me to explain the policy shift:

- It was an unfunded mandate and the cost of teacher training and development and ongoing monitoring beyond the school became prohibitive
- Increases in teacher workload (e.g. increased accountability and performance evaluation, and changes to working conditions) also coincided with a freeze on teacher salaries
- It was being undertaken in some schools out of compliance rather than commitment, and hence met some resistance to change
- The logistics of having a community mentor and organising panels to judge presentations proved difficult for some schools
- The standards lacked clarity and rigour and there was little to no monitoring of these beyond the school or school district
- The State requirements tended to be open to interpretation, even suggesting that it could be undertaken anytime between Years 9 to 12 to meet the requirement.

In short, the NCGP, as it was originally mandated, was in danger of becoming a meaningless ‘check off’ activity in some schools, yet other schools were well prepared and valued it highly. Although state-wide data on NCGP uptake was not collected, according to a survey quoted in the Public Schools of North Carolina revised NCGP Accountability Standards (June 2012), 70% of local school systems across North Carolina require the Graduation Project for their high school students.

The value of the project in terms of student engagement and providing them with opportunities to develop and display 21st Century learning skills has never been in question. In fact the business community of North Carolina were originally, and continue to be, strong supporters of the senior project for this reason.

Although the NCGP is no longer a state-wide graduation requirement, with the new policy comes, according to State Office, better standards and incentives for LEAs to include the NCGP in graduation requirements. Measures to clarify the standards and to increase school accountability include:

- clarification that the Graduation Project consists of four components (research paper, juried presentation to a panel, research-based product, and portfolio documenting the process)
- provision of rubrics for each of the four components (paper, presentation, product, portfolio) and an expectation that schools will define their assessment processes
- provision of a NCGP Contract Form, to be signed by the student and parent, which clearly states the requirements of the project and defines the roles of the school and others involved.

Furthermore, for the first time the State is collecting information from each LEA on which schools are implementing the Graduation Project and including this on the School Report Card, along with the test results for the school, for public scrutiny. The new State policy seems to employ a carrot
rather than a stick approach to implementation. The State claims that these measures will lead to better standards for the Graduation Project. They are also advocating for a multi-year project, rather than students focusing on the topic of interest predominantly in the last year of high school, as a means of furthering the depth of learning. This latter claim, in my opinion, is very debatable.

According to Dr Maria Pitre-Martin, the next stage of improving the quality of the Graduation Project across North Carolina is to introduce mechanisms to monitor the standards. These include the provisions of exemplars to illustrate the standards for the various components and exploring the possibility of having teachers share and compare standards (a bit like South Australia’s social moderation) to improve the fidelity of these assessments. The State accountability measures may make a difference, but my interest was in how the project is implemented in schools.

MOORESVILLE HIGH SCHOOL

Mooresville High is a school with approximately 1700 students, including 380 seniors in their final year of high school. It is seen as a flagship school for its use of technology in the curriculum, and from my observations, the same could apply to the implementation of the senior project.

Mooresville High School – Senior School main buildings

Mooresville High was an early adopter of project learning for its seniors with a small group of teachers undergoing Senior Project® training in the late 1980s. Project implementation has continued to evolve at the school, and in 1993 the project was mandated as a high school graduation requirement in the district (note: Mooresville is a one high school district). A strong culture of valuing the project as a culminating experience has been generated at the school. This culture is enhanced by Nancy Gardner, a Senior Project® trainer and teacher with considerable passion and expertise in projects, teaching at the school. Having said this, Nancy and staff at the school made it clear that the project is not driven by one person, but it is owned by the a team of committed teachers, the school, and the wider community.

Project structure
Students undertake the project over a semester in their final year; half of the students each semester. The school provides a clear structure that guides students in their self-directed learning experiences with various milestones for students to meet and to assist teachers monitor progress. For example, students propose their research topic and intentions as a formal letter to the school project panel for approval, and once finalised they prepare a one page ‘sign of commitment’ that outlines their study intent in a visually attractive format. Each students’ statement of intent is then displayed in the school foyer. Evidence of learning required for course completion has evolved over the years and is now clearly stated by the school, and well understood by students. These guidelines follow the four state endorsed components, but customised to suit the school community. To meet the requirements students must complete each of the four components:

**Paper**  Students electronically present a research paper as a formal academic piece of writing. This is similar to a literature review, and requires accessing a minimum number of secondary sources and a primary source (e.g. interview of a community expert). Students must also include a graphic (not an internet copy and paste).

**Project**  Students undertake ‘hands on learning’ of some form in the community, for a minimum of 15 hours with a community mentor. This could be service learning, or career related, along the lines of an internship. Either way the project activity should be related in some way to their paper.

**Portfolio**  The school has recently moved to a digital portfolio for this component. Students assemble materials used during the process, but not an ad hoc collection of loosely related materials. The portfolio has evolved into a succinct distillation of specific key materials and phases of the project that includes a reflective journal/blog, and an updated resume. Judges, prior to the student’ presentation, access the portfolio online. The portfolios are presented as a website where students show all components of their capstone: paper, letters, journals, reflections, and resumes.

**Presentation**  The presentation is the final phase where all students present their projects in one day. Two presentation days are conducted each year, with 160-180 students presenting at each. Again there are specific requirements for this component. Students are expected to dress professionally and use technology. Presentations are limited to 15 minutes, followed by 5 minutes for questions and answers from judges or the audience. Interestingly, rather than a maximum time, students must present for at least 10 minutes or this component will be judged ‘Not Yet’, meaning that it is not ready to be of the standard required and some redeeming work is needed at a later date. The presentation is seeking the student’s key findings from the project topic and evidence of ‘a stretch’ in their learning.

Each component is supported by strong guidelines and scaffolding, a reflection on the maturity of the project in the school. Assessment rubrics for each component (adapted from those provided by the State) clearly outline ‘the standard’ to meet the graduation requirement. Very few students are deemed ‘Not Yet’ at the standard, but those that are must attend summer school to improve to the standard.
The presentation day, conducted twice a year from 3-5 pm, is an important day for the school and the wider community. With 3-5 community members judging each presentation, it is a logistical challenge, but with the benefit of experience this is now manageable. The school organises and trains judges in advance from a database of interested community members. The fact that they have little problem organising community judges reflects the strong community support it enjoys.

**School structures**

To manage the 380 seniors undertaking projects, half of the students do so in first semester and the remainder in the second semester. The project is ‘housed’ in the English timetabled course. This means that the English teacher is the ‘Project teacher’ who takes responsibility for the teaching, paperwork, and part of the assessment. They lead the students through to the research phase to the completion of the ‘Paper’ component. Once the paper has been completed there is limited timetabled time, and the project becomes a more self-directed process. The student gains credit for the project within the English course, and this contributes towards their Senior English grade.

Further to the English class teacher, each student selects another teacher as the ‘Academic Advisor’ and a community ‘Mentor’. The academic advisor acts as a learning mentor, and voluntarily takes on 6-8 students per semester. The academic advisor meets with the student at least three times to: provide feedback on the paper, monitor the project hours, and prepare for the presentation. The mentor is the person in the community with expertise in the student’s topic, and could be a doctor, mechanic, cook, social worker, parks director, wedding planner, or perhaps a sport coach. The mentor, who cannot be a family member, receives training and completes part of the project evaluation. He or she supports the student in their project component and contributes to the portfolio.

**Value to students**

The capstone project at Mooresville High is a true culmination of each student’s development over the years at the school. It is very much part of the senior year experience and a ‘rite of passage’ that students look forward to being part of as they progress from freshmen. It is treated as a sign that the students are ready for the next phase of their life beyond school. Another key moment in their final year is the graduation walk; complete with cap and gown. Students watch the older student savour this moment over the years and don’t want to miss out. To ‘walk at graduation’ students must complete the capstone project to the required standard.

Staff and students at Mooresville High spoke highly of their capstone project. The following are a few of the comments made:

“As a senior it provided me with a great sense of accomplishment and it feels like I am now ready for graduation”

“The presentation day is a highlight of the school calendar”

“It is a very inclusive learning experience that all students take and are assessed the same. It successfully caters for the full range of students, including those with special learning needs, and is very confirming for them of their place as a graduating student”

“It is a big moment when our learning is on display in front of all, including people from outside the school”
“I have capstone students in my senior English class do a practice presentation with my Junior English class, it is a win-win experience for both groups of students. It enhances the status and value of the capstone”

During my visit to the school I learnt of many engaging projects undertaken by students, however one project stands out. The story was told by an English teacher as we discussed managing ethical issues and student safety. She explained her concerns about one of her students who had an interest in military intelligence and had an ex CIA agent as a mentor. The student planned to use freely available means to build a portfolio or dossier on someone, un-be-known to the person. The student was able to reassure the teacher that he had approval from close family members of the ‘target’ and that to reveal his sleuthing to the person would defeat the purpose of the project. So with safeguards in place the student was able to proceed. The crunch came however, just before his presentation, when the student thought that it was only courteous to inform the teacher that it was in fact her whom he had developed a dossier on, with her husband’s approval!

It was impressive to see how each student proudly engaged with his or her capstone at Mooresville High, and how the project was an inclusive and integral part of the school and community culture. It may not be possible to duplicate these conditions in all schools, but I did take the following lessons from the experience:

- As much as a teacher ‘project champion’ is useful, it is better to involve a larger group of committed teachers to have ownership. Different teachers are able to contribute different skills and insights into the project (e.g. the multimedia teacher introduced digital portfolios and supports students with online resources and group sessions as required).
- Having clarity of expectations, work requirements (research paper, presentation, portfolio, and product) timelines, and established processes and even templates reassures all involved and creates more space for creativity, innovation and depth of learning for the full range of students. Mooresville’s materials are published in a handbook that is posted online via the school’s website.
- Structures ensuring that students share their projects with underclassmen, school staff, and the community helps build a positive culture from year to year (e.g. student portfolios from previous years are available on the school website).
- Continual rejuvenation is needed from year to year to ensure the project experience evolves organically, and to keep students and teachers alert so that it does not become a predictable ‘check off’ requirement.

In short, if teachers and the community understand and value the learning, so too will the students. As a Mooresville High teacher said to me “Our program is based on commitment, not just compliance”.
Connecticut

Connecticut is a relatively small state of nearly 3.5 million people. It has a proud tradition of freedom of choice and this is reflected in the organisation of their education. Although the Connecticut State Department of Education may provide parameters for education, each district has significant autonomy to customizeschooling to suit their local needs. Connecticut was chosen for this study because, as part of secondary reform initiative, they highly values capstone projects and have developed a capstone structure for schools. Connecticut has also outlined future plans to mandate the capstone project as a high school graduation requirement. My understanding of Connecticut senior years reform and capstone implementation was shaped by discussions with Ann Gaulin and Judith Andrews, both educational consultants with the Connecticut State Department of Education, and a visit to New Fairfield High School that included discussions with Dr. Alicia Roy, a district Superintendent, whose 2010 doctoral thesis was on senior capstone projects.

There are 169 school districts in Connecticut. Secondary schools in the state include public comprehensive high schools, technical high schools, agri-science and technology high schools, charter schools and magnet schools. All of these are public schools that students/families may choose to attend. If in the school choice process there is an excess of student applications, a lottery is conducted to settle admissions to a particular school. There are also non-public schools for students to attend.

Reform and the capstone project

The Connecticut State Department of Education (CTSDE) has overseen significant reforms in recent years, most of which are linked to state and federal initiatives aimed at improving student college and workforce readiness, and student engagement.

In 2008, the State Board of Education for Connecticut adopted the Connecticut Plan that has student engagement, acquisition of 21st Century skills, and rigour as its central components. The initial plan included new graduation requirements, including a requirement that all seniors complete a capstone experience to earn one credit towards graduation. The plan required schools, beginning in the 2015-2016 school year, to phase-in compliance (Roy, 2010). This provided a long lead-time for schools to develop implementation structures; districts to both manage and support school reform; and state legislators and decision-makers to refine and reform plans into policy. The state department provided guidelines to support the implementation of capstone projects, often building upon best practices of schools already doing capstones. True to the independent nature of Connecticut schools and districts, some embraced the reform initiative and worked on capstone implementation, whilst others resisted. This being an unfunded mandate, along with other factors such as the emerging national common core and the financial crisis, seemed to impact upon State policy development to an extent. The original legislation was amended to delay implementation of new graduation requirements, including capstone, until the high school graduation class of 2020; what was not delayed was the expectation of a Student Success Plan (SSP) for each student enrolled in a public school commencing with Year 6 students in 2012, and each year thereafter.

The Student Success Plan (SSP) is a tool for the whole of student preparation for their future pathway, and in this way it shares many aspects with the SACE Personal Learning Plan. The SSP is
designed to support students in setting and monitoring goals in three areas: academic; career; and social, emotional and physical development. Accompanying the SSP is the requirement that schools provide supporting structures including that each student has time with a committed adult (i.e. a teacher or member of the school staff), and that each student maintains portfolios and academic/personal records as evidence of development in the three identified areas in each year from Year 6 onwards. Included in the SSP is a culminating project at the 8\textsuperscript{th} grade level and eventually a capstone project at the 12\textsuperscript{th} grade level.

So in short, the capstone project now has a clear place in Connecticut schools, although until 2020 it is being approached in many districts within the umbrella of the SSP, a policy that carries accountability at a district and State level. In effect the capstone currently has indirect status as an option to achieve the goals of the SSP, particularly in the senior year as a culminating experience. The capstone is still mandated effective 2020, but has become a lesser policy priority due to scarce resources and the need to start senior secondary reform with SSP for Year 6 students. In the meantime, the majority of schools in the State have, or are working towards, including the capstone as a valued learning experience and graduation requirement for their senior students. Many districts boards of education have also included the capstone as a local graduation requirement. In 2011 Connecticut law stated that all students in Grades 6-12 have a personal learning plan, or SSP, in place.

Capstone projects are not all the same across Connecticut as they are customized by districts and schools to best meet the needs of their students and community. What is common to all capstones is outlined in a framework of essential practices provided by the State Department of Education for Connecticut. Working with CTSDE, statewide volunteers from secondary and tertiary education, business, and other community groups developed these essential practices, as summarised in Figure 20 below. Note how they are closely aligned to the three areas of the SSP (academic, career, social, emotional and physical development), including links with the in-school advisor/mentor. The similarity of the products required as a result of the capstone to other State requirements, and to those from other countries considered in this study, is also noteworthy.

**Figure 20: Connecticut Capstone Essential Practices**

<table>
<thead>
<tr>
<th>Essential</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Choice</strong></td>
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<tr>
<td>• Student chooses focus</td>
</tr>
<tr>
<td>• Requires new learning</td>
</tr>
<tr>
<td>• In-school advisor support</td>
</tr>
<tr>
<td><strong>2. Standards and Skills</strong></td>
</tr>
<tr>
<td>• Critical and creative thinking</td>
</tr>
<tr>
<td>• Flexibility and initiative</td>
</tr>
<tr>
<td>• Analysis and research</td>
</tr>
<tr>
<td>• Multi-modal communication</td>
</tr>
<tr>
<td>• Effective use of technology</td>
</tr>
<tr>
<td><strong>3. Processes</strong></td>
</tr>
<tr>
<td>• Plan</td>
</tr>
<tr>
<td>• Research</td>
</tr>
<tr>
<td>• Implement</td>
</tr>
<tr>
<td>• Present</td>
</tr>
<tr>
<td>• Reflect</td>
</tr>
<tr>
<td>• Self-Evaluate</td>
</tr>
<tr>
<td>• Ongoing in-school adult advisor/mentor</td>
</tr>
<tr>
<td><strong>4. Products</strong></td>
</tr>
<tr>
<td>• Proposal</td>
</tr>
<tr>
<td>• Journal or Process Log</td>
</tr>
<tr>
<td>• End Product</td>
</tr>
<tr>
<td>• Presentation/Demonstration</td>
</tr>
<tr>
<td>• Reflection</td>
</tr>
<tr>
<td>• Self-Evaluation</td>
</tr>
</tbody>
</table>
5. Supporting Organizational Structure

| • Early planning                        | • Introduction for school and community |
| • Program Coordinator                   | • In-school advisor/mentor also monitors student progress |
| • Required for graduation               | • Systematic inclusion in school resources |
| • Expectations worthy of one high school credit | • Connections to Student Success Plan |
| • Scoring tools                         |                                          |

Source: Connecticut State Department of Education website

The essential practices represent the sole state-wide requirements for the capstone project in Connecticut, and provide the solid, yet flexible framework that each district and school is seeking. It is noticeable that although ‘scoring tools’ are included, no common assessment requirements or rubrics are provided at the state level. Consequently, schools use different ways to assess capstones, ranging from a pass/fail decision at some schools to more fine-grained marks-based assessments at others. The key is that the products described in the essential practices (what we in South Australia may call the evidence for learning) clearly identifies what material from each student is to be assessed. If the capstone were to be mandated fully by 2020 to contribute credit towards each student’s graduation requirements it would need clear accountability, such as amended 120 hoursto form a Carnegie Unit.

In Connecticut, schools and districts have significant choice in the types of capstone experiences the students may undertake. Students may, for example, build their capstone around in-depth research on a topic or an entrepreneurial or building project, a reflective portfolio, community service and/or internship (similar to work experience, but more structured), or a combination of these. As long as the essential practices are being met it fulfills state capstone, and hence SSP, requirements.

The capstone is perceived by many schools and districts as an ideal culminating experience for the full range of students in their final year of high school, including students with special learning needs. This is a clear advantage of the more flexible assessment demands that are not referenced against a common standard across the state. Another advantage is that assessment can be personalized based on the students starting point and therefore growth or ‘stretch’ in each student’s learning on display can be accommodated. Feedback suggests that the capstone project in Connecticut increases student engagement and development of 21\textsuperscript{st} Century learning skills that students need now and in the future. This became particularly evident when I visited New Fairfield High School.

**NEW FAIRFIELD HIGH SCHOOL**

New Fairfield High School is a school of approximately 1000 students from Years 9 to 12. There are currently 236 students in Year 12, or the senior year. The school is the only high school in the district and this is reflected in the way it offers the capstone project. It was through discussions with two students, the Principal and Superintendent of Schools that my understanding of projects at New Fairfield was shaped.
The school has conducted capstone projects for seven years and during this period has refined it to
the SEE (Senior Enrichment Experience) that it is today. The project is currently optional for
students, but it will be a compulsory graduation requirement from 2016. A unique feature of the
school’s project is that it emerged out of students need and is now run by students. While the
principal, who is the Advisor, has an oversight and coordination role, it is four studentSEE
Coordinators who have been chosen to manage and lead the entire process. In their role the
coordinators assist students and teachers; visit internship, project sites and observe students; and
refine and improve the process for future years. The leadership of the project becomes the SEE for
the four students who are coordinators.

Structure of the project

The New Fairfield project has evolved into what the SEE (Senior Enrichment Experience) that it is
today. The following summarises the key elements of the SEE.

The SEE tends to be conducted intensively over the last three weeks of the senior year from late
May to mid-June; after students have completed exams. Students who undertake the project are not
required to attend their final courses or complete final assessments. The SEE is open to all students,
but approval to proceed is dependent upon specified conditions. At the time of my visit, 180 of the
236 seniors were doing their SEE. To be eligible to do the SEE these students: complete a letter of
intent with accompanying parent approval; organise an in-school mentor (teacher) and a community
mentor; and have an academic record with all graduation requirements met, including an updated
student success plan and passing grades for all courses. Over the years the school has developed
forms and templates to support students to prepare the SEE eligibility requirements that are
available as a package from the school’s website. This information is forwarded electronically
(interestingly via TurnItIn) to the approval panel that consists of 2-3 teachers. The panel approves student projects if they meet the conditions, are ethically sound, and link to the students student success plan and hence their future careers. Approvals are issued before Christmas.

The SEE is an opportunity for the student to explore an area of interest or future career. They choose to do an independent project or service activity: or as a career focus, work shadowing or work experience as an unpaid internship or teacher assistantship. Once the student has an approved project they prepare a proposal and an assessment rubric customized to their specific SEE. Students initiate this process and may seek support from a SEE Coordinator, or one of their two mentors (most likely the in-school teacher mentor). The proposal is presented orally, in an interview style form, to the approval panel.

Students undertake their project experience, generally outside of school, during a designated period. During this period they are expected to: meet with their teacher mentor at least once a week; complete at least 25 hours a week; and maintain, on a weekly basis, an online journal that includes a record of progress, reflections and observations in line with their proposed SEE goals. Once the project experience is completed students consolidate their learning and prepare to present their findings and reflect on the project by answering a series of self-evaluation questions. All students then present their SEE findings at a SEE Fair Day. The SEE Fair has two parts for different audiences: during the day for underclassmen, and in the evening for the community. The student SEE Coordinators organise and manage the Fair. At the Fair each student has a display place to present his or her project.

Each SEE is graded as ‘Exceeds expectations’, ‘Meets expectations’, or ‘Below expectations’ based on the student created rubric. Three forms of evidence are assessed: the journal, work habits, and presentation at the fair. The mentor assesses the presentation using all three parts of the project. Results are included on the final student report card. During the process, the mentor is expected to report any lack of progress to a SEE Coordinator. The student’s lack of progress is then discussed with the student and parents as needed, hoping not to end the process at a ‘Below Expectations’ standard. By 2016, students who do not meet the expectations will not graduate.

**Project experiences**

Speaking with the two studentSEE Coordinators, it became very obvious that the SEE is now an integral part of the school culture and one that students look forward to as part of the senior year experience. When asked “Why would you want to do the project?” they explained that it was an excellent way of gaining a hands on insight into a possible future career outside of school, that it was an excellent resume builder. Without stating it overtly, it was evident that the students did not question the value or student ownership of the project, and that it is seen as a true culmination of their years at high school and a ‘rite of passage’ as they move to college or other pathways beyond school. Students were enthusiastic and saw the project as a privilege. When quizzed about the minority of students who did not undertake a SEE, it seems that for some, while they like the idea of being outside of school for three weeks, they could not sustain their interest or fulfill the requirements. These students then did course work during the designated period.
Students undertake a wide range of projects, including: creating a phone app, volunteer work in schools and hospitals overseas, building a surfboard, developing an online business, assisting an elementary/middle/or high school teacher to the point of ‘teaching’ a lesson, producing a children’s story book in three languages, putting on a concert or play, developing presentation for children to de-mystify a doctors visit, creating websites to promote causes or business interests, building a path at a local park, working with others to build a barn, writing and performing an original piece(s) of music, drawing and painting a mural on the side of a town building, refurbishing a portion of the town’s wooden playscape, and creating and promoting a new line of jewellery made from recycled materials.

The Principal noted the evolution of the project and shift in teacher and community acceptance over the years. She commented how even though participation is voluntary; staff have become more supportive over time. The project has many complexities including students working outside the school, with both in-school and community mentor involvement, voluntary staff involvement outside of the timetabled program, personalisation of many aspects of each student’s project, and the logistics of organising the fair where students present the outcome of their project. However, it happens, and is valued as a pivotal part of the senior year experience. From my observations two factors drive the success of the SEE: the strong student voice in all aspects of the project, and the well-developed project materials and structures that have been established. The question remains, ‘Will the project’s success at the school be diminished by making it a compulsory high school graduation requirement?’

NOTABLE FEATURES FROM UNITED STATES

- Standardised testing and data driven accountability are significant forces in the US educational landscape over the last ten years. Examinations are an annual activity and the stakes are high for students, teachers and schools.
- The majority of education policies, including graduation requirements and the inclusion or not of a Project, are not nationally mandated, they are determined at a state level.
- Post school college or university entry is generally determined before the student graduates in the senior year (Year 12) and is therefore, unlike Australia, not dependent upon Year 12 scores/grades.
- Different titles such as ‘senior project’, ‘capstone project’ and ‘culminating project’ are used for Projects in the US/ Projects have a presence in nearly all States of the US, although very few, if any States, include a Project as a compulsory graduation requirement for all students.
- The origin of Projects in the US can be traced back to Oregon in 1986 that led to the Senior Project® model that appears to underpin projects across the country. This model involves students choosing a topic of interest to complete 4Ps: paper, project, presentation, and portfolio.
- Each state visited has a different focus on the project, yet the same fundamentals were evident based on the 4Ps.
- Many schools have over 20 years experience with Projects and project-based learning is a significant feature of high school graduation for many US students.
• The inclusion of mandated Projects, particularly on a state-wide basis, may be losing some impetus due to the increased reliance upon high stakes testing and accountability as indicators of successful completion of high school. The slower economy and resultant impact on teacher pay and conditions has also inhibited this impetus.

• Successful projects observed had very clear guidelines for students to follow, including the forms of evidence required for assessment. Involvement in the community and presentations of findings to an audience including a community member(s) were features of these projects. Each school had autonomy to adapt requirements to suit their students and the wider community.
CONCLUSIONS AND RECOMMENDATIONS

The study conclusions and recommendations are based on the following activities undertaken across Singapore, UK and the USA during the six-week study tour:

- strategic conversations with representatives from peak organisations, such as examination boards, international education providers and government/district education authorities, and
- observations and time spent listening to students and teachers in eight schools across the three countries visited

Personal reflections, prompted by the study tour stimulus, on the intent and implementation of the Research Project in South Australia, have also shaped the following conclusions and recommendations.

Educational reform around the world is striving to make the shift from an industrial to a post-industrial model. Pivotal to this, is a shift from students being taught knowledge and skills in a linear, superficial way, to empowering students to think more deeply and apply knowledge and skills to make meaning and develop confidence and skills as learners. What is valued in today’s dynamic, post-Google, connected world, and likely to be required into the future, is self-directedness as a learner. Learning content and procedural knowledge, with assessment focused on recall or routine manipulation of information and processes, is no longer fit for purpose. With nearly all students continuing their schooling to Year 12, and the reality that senior school changes can drive practice in the other years of schooling, reform of senior secondary curriculum and assessment is pivotal to educational reform.

This study concludes that self-directed, research-based learning as a senior secondary subject (shortened to ‘projects’ throughout this report) has an important role to play in reforming education. Projects can provide the intellectually engaging and challenging learning to best prepare students for work, study and life. They can foster qualities such as curiosity, creativity, innovation and skills in project management, discerning use of information, and higher-level communication.

The international educational agenda, however, is bursting with initiatives and imperatives, including the rise of data-driven accountability. Increasingly data from standardised tests (generally end of program examinations), often aligned to a common national curriculum, impacts on the future of schools, teachers and students. A common theme running through conversations throughout this study has been the tension between high stakes, standardised tests and valuing performance-based assessment, such as projects.

Australia, to an extent, is following this international trend with the increasing importance being placed on results of national literacy and numeracy tests (NAPLAN) and the emergence of a national curriculum. This is not necessarily a negative trend, after all, it is difficult to argue against a strong, national focus on literacy and numeracy, or the development of curriculum and standards for key disciplines that are consistent across Australia. The concern, however, is what is at risk of being overlooked. Instead of becoming less relevant, this study revealed that projects provide a valued alternative learning and assessment experience for students, and they can successfully coexist with traditional discipline based subjects and examination assessments. Projects present an opportunity for students to ‘switch-on’ as a learner, and develop insights and skills in ways that other subjects
may not. There is a strong case for the complementary learning and assessment that projects offer.

An incidental, but important conclusion from this study, beyond the Research Project, is that senior secondary education in South Australia has much to be proud of. There are many positive features, including: the provision of cohesive learning and assessment requirements and performance standards for each subject developed in close consultation with teachers; the value placed on teacher judgments in assessments; the involvement of teachers in standards setting and moderation processes; and the accessibility of professional learning opportunities. While each of these may not be perfect, they, combined with the use of a more constructively collegial approach to teacher evaluation, compare very favourably with teacher involvement and conditions elsewhere. Again, I stress there is room for improvement, but it does provide a salient reminder to value what we currently have in South Australia/Australia.

RECOMMENDATIONS

The following recommendations are primarily, but not exclusively, directed towards optimizing the effectiveness of the Research Project in South Australia. These recommendations include those at a broader community/system-wide level as well as those that are more immediately implementable in schools. In all cases the recommendations are intended to provide stimulus for further discussion rather than offer lofty directives.

1. Persistence

It has not been an easy matter for any of the locations studied to introduce a student self-directed, research-based subject into the senior curriculum. In each case the introduction met initial resistance and has taken time to be fully accepted and valued by students, teachers and the wider community.

Resistance to change and uncertainty about the value of this student-driven approach to learning is understandable. Concerns about implementation difficulties for teachers, what it displaces in the crowded curriculum, reliability of assessment, and doubts about the rigour and value for the learner, are all very real and immediate. However, this study discovered that over time, contention and resistance eases as students, teachers and the wider community become more familiar with the longer-term benefits of projects for the learner.

In the UK, for example, when the Extended Project was introduced in 2009 as an optional senior secondary subject, it had only 5,094 enrolments, but three years later 28,572 students completed the subject. Notably, the subject now attracts a wide range of students across diverse learning contexts. The subject is increasingly valued by students, teachers, and the wider community. When introduced on a mandated basis, as the Project Work was in Singapore in 2003, it took three or so years before the initial pessimism and resistance turned to acceptance and support.

In 2011, within a relatively short timeframe, South Australia took the bold step to introduce the Research Project for all Year 12 students. Just the same as Singapore and the UK, the introduction of the Research Project met some resistance and pessimism. Amongst the findings from an evaluation
of the first year of the ‘new’ SACE was a negative perception amongst some ex-students. In response to the evaluation findings, and other external pressures, education decision-makers have shown commendable conviction by strengthening their support of the subject for the future.

2. Perception

It takes a highly skilled teacher to optimize learning when students enter a subject with negative perceptions, and at times a misinformed understanding of the subject, as has been the case for some students with the Research Project. How the wider community (media, universities, business, families) and teachers and schools perceive the subject has a powerful influence on what students value and therefore their learning. For the Research Project to achieve its significant potential as a senior secondary subject, informed, committed and enthusiastic teachers cannot be expected to do it alone, they need support.

Influences beyond the teacher and the school have a major impact on the perception of projects examined in this study. In Singapore, for example, the government has been a driving force through the inclusion of ‘a self-directed learner’ as one of the four desired outcomes of education or aspirations for all levels of schooling. In England, one of the tipping points in the popularity of the Extended Project seems to have been the public support of universities, including the more prestigious universities. In parts of the USA amongst the strongest supporters of capstone projects have been business and local communities. In each case, a positive perception of projects is created and the students are the beneficiaries.

How younger students perceive projects is a good measure of success. Schools visited in this study used a range of strategies to build a positive perception of projects so that younger students look forward to their chance to shine in the senior years. In the schools visited in the USA this was particularly evident where the completion of their senior project was seen as a ‘rite of passage’ in the same way as the graduation ceremony. Schools have built a positive project culture over the years by having the school and wider community aware and involved in projects that senior students were undertaking.

The opportunity for students to study, in-depth, a topic of their own interest has great learning potential, and the potential emotional engagement with this learning should not be underestimated.

3. Further longitudinal research and data analysis

Although data exists to support the claim that self-directed, research-based learning can provide valuable learning for students, much of this is based on implementation trials and mere anecdotal evidence. This study itself adds to this anecdotal evidence as educators and students consulted overwhelmingly confirmed this claim. The study also discovered that universities are increasingly valuing this secondary school initiative to better prepare students for further study. However, it appears that there is a dearth of studies examining the longer-term benefits of this learning. Many of the outcomes of the Research Project and similar initiatives may not be immediately evident to the student, but these may become more apparent as they pursue pathways beyond school. It would be beneficial to examine the views of students three or more years after completing their
project, in particular students pursuing different pathways, such as work compared to further study. This study welcomes further longitudinal research and data analysis in this area.

4. **Clarity of requirements**

After the first year or two of implementation, in each precinct visited, the learning and assessment requirements and standards have become clearer and better understood by teachers and students. As teachers became more confident there were able to better facilitate the learning for students.

Building teacher confidence takes time, and moves by the SACE Board in response to the first year evaluation to further develop online support materials with assessment exemplars, and provide teacher workshop and forum opportunities should be applauded. The South Australian model of fifty or so teachers coming together twice a year to quality assure the assessment standards through a social moderation process was viewed with envy by other precincts. This moderation model provides a platform for a solid community of practice amongst teachers.

Most programs were refined after the initial few years in response to student needs. A consistent feature of successful programs is the clarity of learning and assessment requirements and standards and the effective communication of these to students. Not only do teachers and schools become clearer about the requirements over time, they tend to build checkpoints into the learning process to guide students towards self-directed learning, rather than ‘dropping them in the deep end and seeing if they could swim’. Clearly structured projects with signposts to learners at strategic points emerges as best practice.

The balance between scaffolded learning and self-directed learning has been well considered and implemented in the most effective programs. If teacher developed structures are not too narrow or formulate, they can reduce stress and anxiety and free the learner to obtain greater depth of research.

5. **Change is good**

The introduction of the Research Project in South Australia has presented a vibrant and challenging learning experience for students, teachers, and schools in these early years of implementation. This has resulted in change not only in the senior years of schooling, but in the middle and earlier years. Over time, as mentioned above, clarity of requirements and standards emerges as a feature of successful programs, however, there is a risk that the learning experience may become predictable and lose some of its edge. This risk was flagged by notable South Australian educator, Prof. Marie Brennan, who, as teachers were preparing to implement the Research Project for the first time foresaw that greater than the risk posed by teachers being initially unclear of the learning and assessment requirements was the risk of teachers ‘taming’ the experience after a few years, and undermining one of the subjects strengths.

In precincts where projects are more mature, such as in parts of the USA, the benefits of tweaking aspects from time to time were apparent. Whether these are changes to incorporate new technologies available, or shifts in post school pathways, or changes to mitigate against re-use of
previous students’ work, these changes tend to maintain the vibrancy of the learning experience for both students and teachers.

6. **Reduce Folio evidence required for assessment**

Common to all precincts studied, is the reduction in the evidence required to assess students after a few years of implementation. Whether this is formalised at a system level as part of the assessment quality assurance process, or driven by teacher practice, the evidence tended to be reduced and become more specific and standard across the cohort. For example, in the UK a booklet of evidence is provided by each awarding agency, directing students and teachers towards key elements for assessment.

Currently Research Project students are encouraged to maintain an extensive record of their research for assessment as a Folio, with a selection of ten pages to be submitted to moderate the teacher’s assessment decision. This expectation that students continually maintain a detailed, reflective record of the research development may well be a contributing factor to the significant gap in achievement between males and females. The focus elsewhere tends to be upon the research outcome or product. Interestingly, while the majority of projects considered have a word limit on the product, this tends not to be enforced strictly. It seems the display of depth in the product or outcome over-rides strict adherence to word counts.

This study recommends that Folio evidence for assessment be contained and efforts be made to include a degree of commonality in the evidence sought. For example, evidence of secondary source analysis could be limited to two pieces, with an equally focused amount of evidence of primary data collection (if relevant) required. The extent and resourcefulness of research could be demonstrated in an annotated bibliography, for example, rather than students keeping a full record of each source for assessment. The workload advantage for teachers and students is obvious. A less obvious benefit is the removal of one uncertainty in a learning experience, which by nature is amorphous and creative, leaving scope for deeper and more purposeful application of knowledge and skills.

7. **Refine compulsory nature and timelines**

If, as this study concludes, self-directed, research-based learning offers a valuable and unique opportunity for students to prepare for work, study and life beyond school, it is understandable that senior secondary structures, such as the SACE, have mandated such learning for all students. After all, which students should not have access?

Implementing the compulsory Year 12 Research Project as a subject that all students must achieve a pass grade (C standard) in to graduate, with university entrance implications, presents some real challenges. Some of these challenges are being addressed by the development of two different versions of the Year 12 Research Project for 2014 onwards (one more academically focused and able to contribute to the university entrance score (ATAR) and the other with lower metacognitive and written demands that does not count towards ATAR), and the introduction of a Year 11 Research Practices subject to build student research awareness and skills.
Significant challenges remain however, including how to stretch students through independent learning, and meet the assessment requirements to a high standard, in a semester length 60-hour timeframe. The short timeframe makes it difficult for teachers to include a skill-building element into programs, and for students to achieve the intended depth of exploration and investigation. Variation exists in the recommended learning hours for the Projects studied overseas ranging from 40 hours for the IB Extended Essay to 120 hours (typical for a subject within one academic year) for the UK Extended Project and many Projects in the USA. It stands to reason that a longer duration allows for more guided learning as well as scope for student research have greater in-depth. However, a full year study would not suit nor benefit all students.

This study recommends that it is worth exploring an alternative where all students are required to undertake a semester length Year 11 Research subject, and that a full year, Year 12 subject is offered for interested and motivated students. This would retain the benefits for all students, and provide an opportunity for those students in their final year to extend themselves. Requiring all students to undertake a Year 11 subject opens possibilities for more holistic assessment of student research, and programs that focus on the development and application of research skills such as those included in Cambridge International’s Global Perspectives, and the newly developed SACE Research Practices.

8. Value holistic marking

Currently the Year 12 Research Project involves teachers making three discrete assessment decisions for the Folio, Research Outcome, and the Evaluation. This model stands alone amongst projects studied, with all others valuing the ability to holistically assess the entirety of the student’s research to arrive at one final assessment decision. To be able to consider the students evidence in its fullness offers a more valid assessment. It also provides a better “fit” with the essence of this learning and potentially provides more reliable results. Although factors beyond the control of the Research Project, such as the requirements that all Year 12 SACE subjects must have an externally assessed component, make this difficult, there are different ways of achieving a more holistic assessment of student work and these are worthy of exploration.

9. Value teachers

The teacher is crucial to the success of student self-directed learning. Although the same could be said for any subject, the value of teacher’s skill and enthusiasm appears magnified with projects. The study did not discover a particular teacher type or subject-specialist background that was best suited to the subject. It does conclude however, based purely on anecdotal evidence, that teachers of projects, particularly in the early years of implementation, tend to be committed and dynamic teachers who value individual student learning and are the risk-takers and co-learners (or maybe in the minority of cases the coerced, but that is a different story). Teacher energy no doubt flows through to the students who in turn are more likely to succeed and realise the potential of the learning experience.

To be most effective teachers need support from within the school and more widely in the community. This includes the provision of clear guidelines from which to work, opportunities for professional learning, and celebration and acknowledgement of student and teacher successes. The
most effective models observed were those where a team of committed teachers led the project in a school, and all teachers within the school were aware of, if not somehow involved in and supportive of, the learning or exhibition of the learning. Greater awareness within the wider community, and support from businesses, university, and the media are also contributing factors to program and subject success.

Facilitating self-directed learning is teacher time and energy dependent, but at the same time highly motivating and rewarding. Workload was noted as an issue by teachers consulted, but in most cases this was not a barrier to successful involvement. None-the-less, a sustainable balance needs to be achieved, as the teacher is crucial to student success.

10. Explore ways for students to exhibit or present their learning

Except for the IB Extended Essay, all other projects studied value students presenting their final outcome to a panel or audience, rather than generally more passive research outcome format adopted in the Research Project. Even the IB currently has a *viva voce* or concluding interview with the student as an option, and this may become a mandated requirement in the future.

Students displaying the outcome of their research to an audience that may include peers, family, community members, or one or more teachers, adds value and authenticity to the learning experience. In most cases studied this display of learning involved a presentation by the student followed by a question and answer session. Although potentially daunting, the benefits to the student were clearly apparent in terms of consolidating and ‘owning’ their findings, and developing effective communication skills. It was apparent that this is an accepted part of the subject and assessment, and due to clear structures and protocols, less daunting than expected for students. In fact, although based on admittedly limited observations and anecdotes, students found the exhibition affirming and an integral part of the purpose of their research. Another less obvious benefit of exhibitions is the potentially positive perception that this creates amongst families and the wider community, and other students in earlier year levels.

This study concludes that student’s exhibiting their learning provides for powerful and authentic learning and recommends that ways to incorporate these into the Research Project be explored. To mandate that all students exhibit and defend their findings presents significant logistical challenges, including the time and resources required for implementation and quality assurance, as well as equity considerations for specific groups of students. However, successful models identified in this study show that it is possible. Currently the subject has an assessed formal discussion placed within the developmental phase of the learning, although this tends to lack gravity or purpose for the student. Perhaps a most realistic transitional option for the Research Project is for the discussion assessment be tweaked as a presentation and discussion and employed for the proposal.

11. Maintain and broaden scope for schools to tailor programs

For each project studied, including the Research Project, there is scope for schools and teachers to design their own programs. Program variations include students commencing in Year 11, with program duration from a semester to over a year, and the use of an intensive week or two followed
by a period of off-line mentor support. Programs tailored to best suit the school context and student needs is best practice.

Tailoring programs at a school level was particularly evident in the USA where schools and districts have more autonomy for a number of reasons, including the fact that results are not used for tertiary entrance purposes and the standard is unlikely to be quality assured beyond the school. Some examples of how projects were shaped to suit students needs and school culture include: students presenting findings at an event with community members, programs built around community mentors or work experiences, short film exhibition of findings, links with another school or country on-line, group projects, and compulsory elements such as the use of technology. It stands to reason that where the project is a close fit with what is valued by the schools as a community, it is more likely that a strong culture will develop where the younger students and their families understand the potential of the learning and look forward to it as part of being a more independent senior learner preparing for life beyond school.

As observed in some USA schools, where a minimum standard of project is required for a student to graduate, the provision of a supplementary or ‘catch-up’ opportunity has some merit. It enables students to avoid returning to school for another year or semester to achieve the graduation requirement, and can act as a more immediate incentive to succeed in the first instance. These and other significant customisations at a school level are, in a South Australian context, better suited to a Year 11 program or the non-ATAR Year 12 subject.

The more successful programs tend to include a significant “taught element” of research skill building either before, or throughout, programs. Most teachers lamented how students often lacked the necessary skills to undertake their own quality research and effectively present their findings. The explicit teaching and development of these research skills appears necessary, but this may be less necessary over time due to a positive backwash from the project being a valued feature of the senior year experience. The importance of students choosing a challenging and achievable topic for research to achieve its potential was another study finding that was consistently emphasised by teachers and others. It seems that students require skill development, time and guidance to best prepare for self-directed research.

This report has hopefully succeeded in an accurate depiction of the position of self-directed, research-based learning in the various locations visited in Singapore, UK and USA. The recommendations presented are provided to generate fertile discussions to improve the outcomes of senior secondary learners now and into the future.

I leave you with the following .................
Think about your own schooling, and how much of what you learnt have you used post school. Now consider if you were at school now. What should school equip you with to enable you to realise your potential? This study suggests strongly that, along with fundamental knowledge and skills in literacy and numeracy, young people require a disposition towards innovation, problem solving, curiosity, and creativity. In other words, students today need to be developed as expert learners with higher levels of self-directedness. Self-directed, research-based learning as a senior secondary subject is, and can continue to, play a significant role in this shift in education.

Educational Philosopher John Dewey captured it succinctly nearly a century ago when he stated:
"If we teach today as we taught yesterday, we rob our children of tomorrow."
John Dewey (1916)
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