



UNIVERSITY OF
CANBERRA

CENTRE FOR SUSTAINABLE
COMMUNITIES

Centre for Sustainable Communities
Monograph Series No.1

***Still Winning?
Social Inequity in the NSW Senior
Secondary Curriculum Hierarchy***

Philip Roberts, Jenny Dean
& Garrett Lommatsch | December 2019

© Centre for Sustainable Communities, University of Canberra, 2021.

All rights reserved. Apart from fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright Act 1968, no part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing of the publisher.

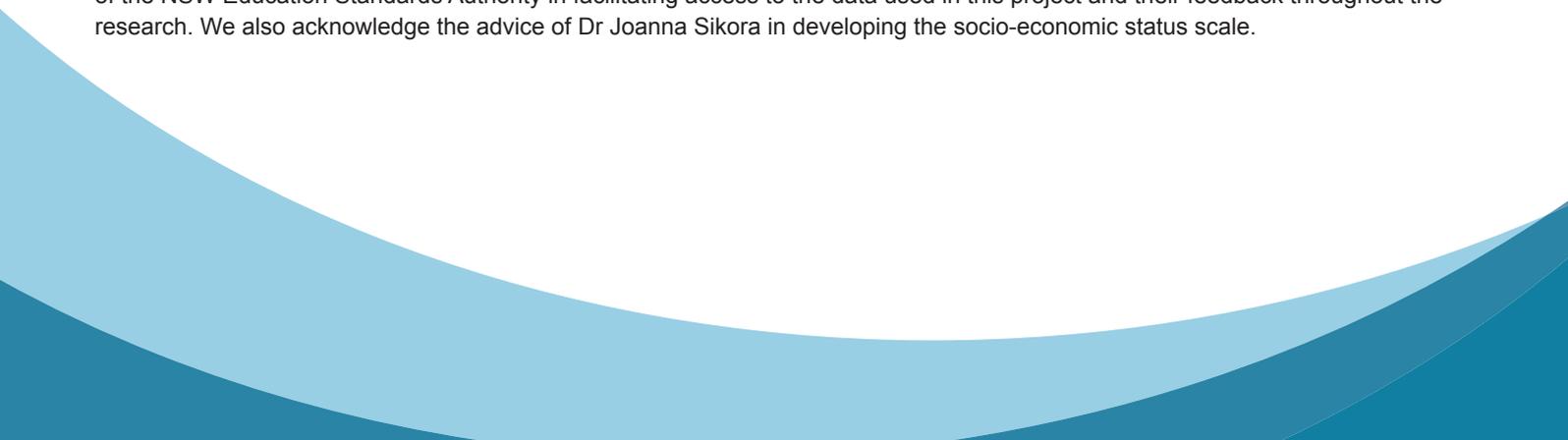
ISBN: 978-1-74088-492-1

The views expressed in this report are those of the authors and are not necessarily those of the Centre for Sustainable Communities, Action Research for Development research group, or the University of Canberra.

Recommended citation: Roberts, P., Dean, J., & Lommatsch, G. (2019). *Still Winning? Social Inequity in the NSW Senior Secondary Curriculum Hierarchy*. Rural Education and Communities research group. University of Canberra. Centre for Sustainable Communities Monograph Series No.1.

Acknowledgements

This report relates to findings from the 'Access, achievement and the spatial distribution of curriculum in NSW senior secondary schooling' research project. The research was supported by an early career research development grant from the Centre for Sustainable Communities, and the Faculty of Education, at the University of Canberra. We would like to acknowledge the support of the NSW Education Standards Authority in facilitating access to the data used in this project and their feedback throughout the research. We also acknowledge the advice of Dr Joanna Sikora in developing the socio-economic status scale.



About the Centre for Sustainable Communities

The Centre for Sustainable Communities (CSC) contributes to healthy and sustainable social, cultural, ecological and economic futures by providing research and professional development services to communities, government and the private sector.

Our strengths, developed over more than fifteen years, are those of collaborative and participatory research in regional and community development in both Australian and international contexts. Working in partnership with communities and related regional and community agencies, we aim to:

- Build sustainable environmental, social, cultural and economic capacity through partnership in research and development
- Work with communities in the recognition of their own strengths, assets and capacities using processes which respect action learning and collaboration
- Develop strategies for change in response to evolving environmental, social, cultural and economic contexts
- Build leadership and professional networks that support sustainable and cooperative endeavours in communities.

The Centre's research highlights learning and development beyond formal education, in community and organisational settings and contexts where informal learning is significant. We are interested in how this perspective can contribute to the adaptation of formal institutions to the contemporary challenges of social and cultural change.

The Action Research for Development research group, within the CSC, uses asset-based community development analysis, appreciative inquiry, participatory action learning and the co-construction of knowledge to work with, and for, marginalised groups and/or those with low literacy. The group's research focuses on how groups can be reached through experiential and informal learning that harnesses and values their local knowledge.

CSC Director: Dr Katharine McKinnon

Monograph Series Editor: Dr Philip Roberts

www.canberra.edu.au/research/faculty-research-centres/csc

Executive summary

This research examines potential inequalities in access to the NSW Higher School Certificate (HSC) Curriculum and HSC achievement. The research has undertaken a comprehensive study of curriculum access and achievement in the NSW HSC, with reference to the socio-cultural characteristics of students and schools. It has done so in order to understand the influences upon access to, and achievement in, the NSW HSC at an individual and institutional (school) level.

The research raises questions about why some subjects are studied more than others and related equity implications or implications for practice in these subjects.

Through these results, the curriculum can be seen as a vehicle of educational achievement, and not as comprising neutral subjects of equal value. Instead, the curriculum operates as a system to reinforce social status. This system increasingly funnels low socio-economic status, and non-metropolitan, students into subjects with lower average achievement levels and into vocational education subjects.

To improve equity, we need to ensure all students have access to higher-status powerful subjects or ensure all subjects are valued equally.

Key findings

Key finding 1: The NSW curriculum is organised into a hierarchy

Key finding 2: Access to the hierarchy is linked to earlier school achievement

Key finding 3: Access to subjects is still patterned by gender

Key finding 4: Access to subjects is patterned by location

Key finding 5: Student family characteristics relates to students' access to, and achievement in, the hierarchy

Key finding 6: Vocational education and training options are increasingly studied by lower SES students and students from rural areas

Key finding 7: Student completion rates are related to student location and student family characteristics

Key finding 8: Hierarchies exist within subject options

“To improve equity, we need to ensure all students have access to higher-status powerful subjects or ensure all subjects are valued equally.”

Introduction

In this research study we examine access and achievement in the New South Wales (NSW) senior secondary curriculum, commonly referred to as the Higher School Certificate (HSC). Curriculum, as represented by school subjects, is examined here as the medium of educational attainment, and as such is the object of this study. In this report we present select summary findings about the relationship and values between subjects, and the characteristics of students who study, and those who succeed in, these subjects. We also present summary findings in relation to access to, and achievement in, these subjects by location, gender, and student socio-economic background.

The central premise of this research has been: if some subjects are more advantageous to study and not accessed equally, we have an unequal system. If access to the curriculum produces unequal outcome, the system is inequitable. Instead, it legitimises social status and later opportunity based on student family background, gender and location.

By understanding access and achievement on a state-wide scale we can better understand why some students choose certain subjects, the opportunities they afford, and the influences on subject choices and subsequent achievement. By looking at an individual level we can gain insight into issues of social-economic influences on student subject selection decisions, while examination at a school level allows insight into issues of school competition and the decisions of school leadership in relation to subject offerings.

This research uses Teese's 1995 report 'Who Wins at School?' as a reference-point. That report showed that historically socio-economic status, location and gender exercise a significant influence on participation and performance in Australian education, including examples

from NSW. The research reported here shows that socio-economic status, location and gender continue to exercise significant influence on participation and performance in NSW.

Furthermore, Teese's research (2000) showed that in Victoria there was a hierarchy of subjects in the curriculum, and that access to and achievement in the hierarchy was strongly influenced by socio-economic status. Roberts (2016) showed that a similar hierarchy existed in NSW at the school level, influenced by school ICSEA and location. The research reported here establishes that a similar hierarchy exists at the individual student level, and that access to, and achievement in, this hierarchy is influenced by socio-economic status, location and gender. The replication of the pattern of subjects and social status observed by Teese in a different educational jurisdiction, and over 20 years later, is testament to the resilience of such social hierarchies in curriculum. Indeed, the institutional and jurisdictional framework can vary while producing the same social outcomes.

In this report we reference subjects in relation to their HSC scaled mean (2017). The scaled mean is used by the Universities Admission Centre (UAC) to calculate a student's Australian Tertiary Admission rank (ATAR). We have used this here due to the power of the ATAR as a proxy for measuring student outcomes from secondary education in the public sphere. However, the limitations of this approach, especially in reinforcing the importance of university entry and academic subjects, is recognised. We certainly do not intend to reinforce ATAR as the main outcome of schooling. Using this research to seek advantage in the ATAR would be a misuse of this research, especially as subject scaling is conducted annually by UAC.

Nonetheless, as the results of this research illustrate, the curriculum system does determine who goes into higher education, and further training, and from where. As such, inequities in accessing subjects that are powerful in determining post-school options is a significant equity issue.

The research raises questions about the nature of subjects in the hierarchy and why they are studied in such a clearly patterned fashion according to socio-economic status, location and gender. Implicit here are questions about the nature of knowledge in the curriculum, and issues related to a knowledge-centric curriculum.

The distinctive NSW curriculum culture plays a part here as well. The NSW curriculum culture is typified by a focus

on a version of 'excellence' (Roberts, 2016) that draws upon a classical academic orientation, underpinned by notions of meritocracy (Yates, Collins & O'Connor, 2011). Similarly, the NSW assessment system, with its strong examination component is a contributing factor. An examination system itself requires a curriculum form that is knowledge-centric so that examinations can be developed in relation to that knowledge (Luke et al., 2013).

Finally, this report is a general overview, only. Further detailed analysis will be published in future reports and in academic publications. As such, the report is written for a general audience. For specific detail on the statistics reported and methods employed, please contact the authors and/or consult the academic publications.

Methodology

This research drew upon data (n = 73 371) for all NSW students who qualified for the NSW HSC at the end of the 2017 school year. Mapped records for these students' NAPLAN results going back to their Year 3 scores are also analysed. No individually identifiable student records are contained in this database. Data was provided under agreement by the NSW Education Standards Authority and examined under University of Canberra Human Ethics approval number 20170077.

In calculating individual student SES we have developed a measure drawing on the AUSSIE06 (McMillan et al., 2009) occupation scales, using the parental occupation

and education information for individual students. The measure of socioeconomic status used to analyse the data is a proxy measure assessing the social standing or prestige of occupations based on information provided by the parent(s) of each student in student enrolment collections. This has been combined with information on years of education drawn from data on parental educational attainment. In this way, the measure is derived from two out of three of the most common components for family socioeconomic status: educational attainment, occupational status, and financial resources (Merola, 2005).

Key finding 1: The NSW curriculum is organised into a hierarchy

“There is a collection of subjects that are predominantly studied by students of higher average SES, and that also have greater value to students’ ATAR.”

The concept of curriculum hierarchy

The concept of the curriculum hierarchy draws upon the work of Teese (2000, revised 2013), and Teese, Lamb and Helme, (2009), with reference to the Australian State of Victoria, and also Bleazby (2015). In this concept, there exists a hierarchical relationship between school subjects, with some being regarded as higher status than others. The higher-status subjects are characterised as abstract, theoretical, and as having a long history of being studied. The lesser-status subjects tend to be newer forms of knowledge, with a limited history of being studied, and are associated with practical knowledge that is applied.

The hierarchy simultaneously operates symbolically and socially – it is epistemological and organisational. As such the hierarchy is designed and reproduced as part of the curriculum system, based on perspectives about the value of certain knowledge, how, and which, students should be given access to this knowledge.

Here we gesture towards the generally accepted tenets of educational sociology in relation to the connection between family (home) and school knowledge (see for instance, Connell and colleagues' classic study, 1982). It seems the system has potentially formalised this relationship in school subjects.

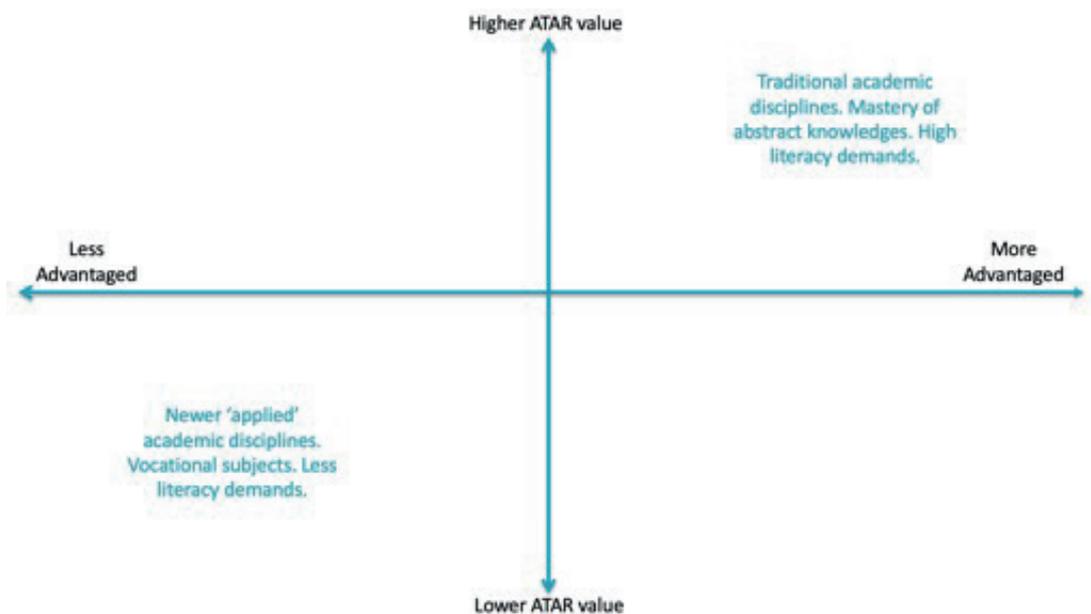


Figure 1: The concept of the curriculum hierarchy

Importantly, the hierarchy, both as a concept and as illustrated in this research, should be the subject of much debate and discussion. There is after all no easily established reason why subjects are perceived in this

hierarchical fashion. That is, the hierarchy is socially produced by the value that is placed on certain subjects and certain forms of knowledge that these subjects represent.

The NSW curriculum hierarchy

In this research we found that the NSW curriculum is organised into a hierarchy. This hierarchy operates in two related dimensions: the mean socio-economic status (SES) of students studying each subject, and the value that each subject carries towards a student's Australian

Tertiary Admission rank (ATAR). In figures 2 to 4 we have plotted subjects against mean student's socio-economic status and the scaled means for subjects (2017). Only subjects that count towards an ATAR (c2017) have been used.

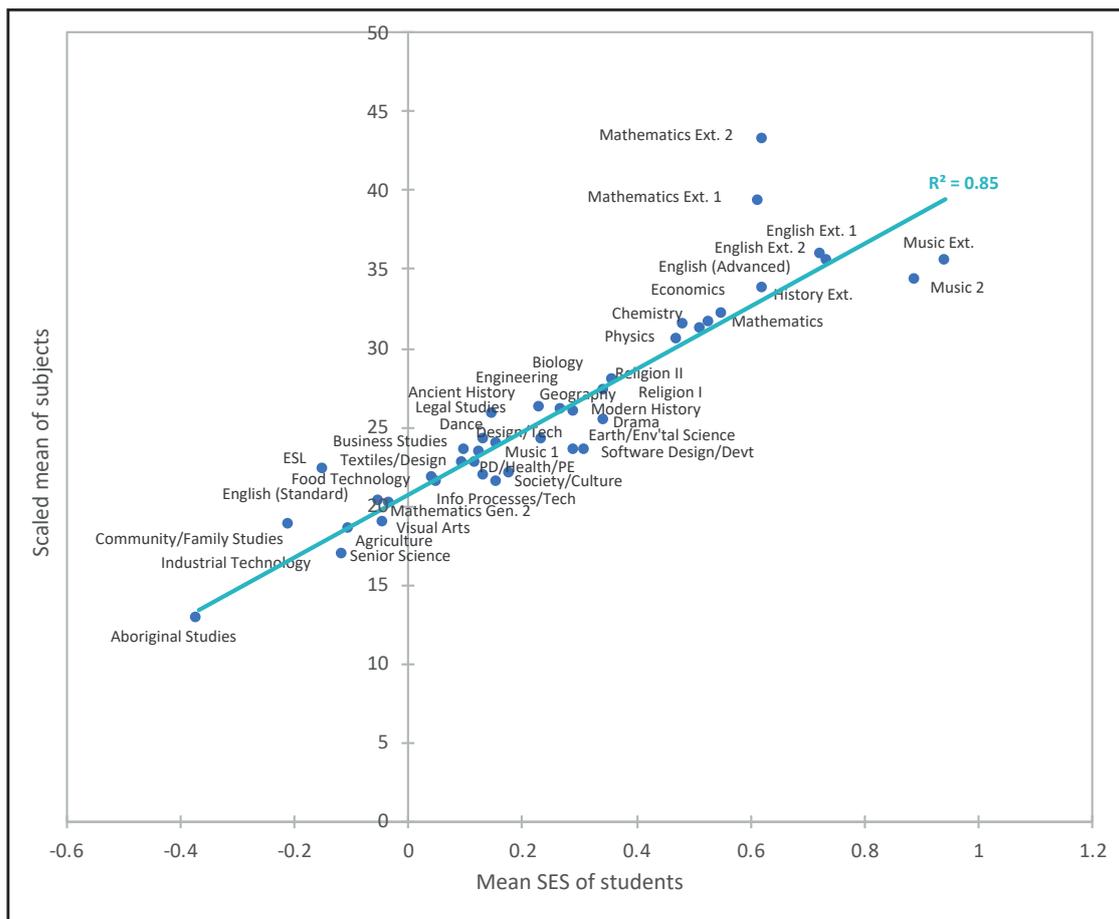


Figure 2: The NSW curriculum hierarchy (select subjects)

In the NSW curriculum hierarchy, there is a collection of subjects that are predominantly studied by students of higher average SES, and that also have greater value to students' ATAR (top right-hand corner). Similarly, there is a collection of subjects studied by students of lower average SES that have less value to students' ATAR (bottom left-hand corner). These 'higher-status',

'powerful' subjects tend to be those related to university disciplines and studied as intellectual knowledges to be mastered. The 'less powerful', 'lower-status' subjects, tend to be more applied subjects that are done rather than studied. This distinction occurs within the academic curriculum, and between the academic and vocational strands.

We have removed languages and vocational education and training subjects (VET) from figure one to reduce visual clutter. Instead, these are shown in figures 2 and 3 respectively. When we consider subjects prior to scaling (the vertical axis), the position of subjects on the horizontal axis does not change, as this is related to student SES. This reinforces the different social backgrounds of student cohorts studying each subject, regardless of ATAR power.

Languages prove an interesting case in point regarding access to the hierarchy. The proportion of students studying languages is relatively small in NSW, and Australia generally. However, when they are studied, we can see that they are studied by students with a higher average socio-economic status. Similarly, the old European and classical languages dominate the top right (advantaged and powerful) corner.

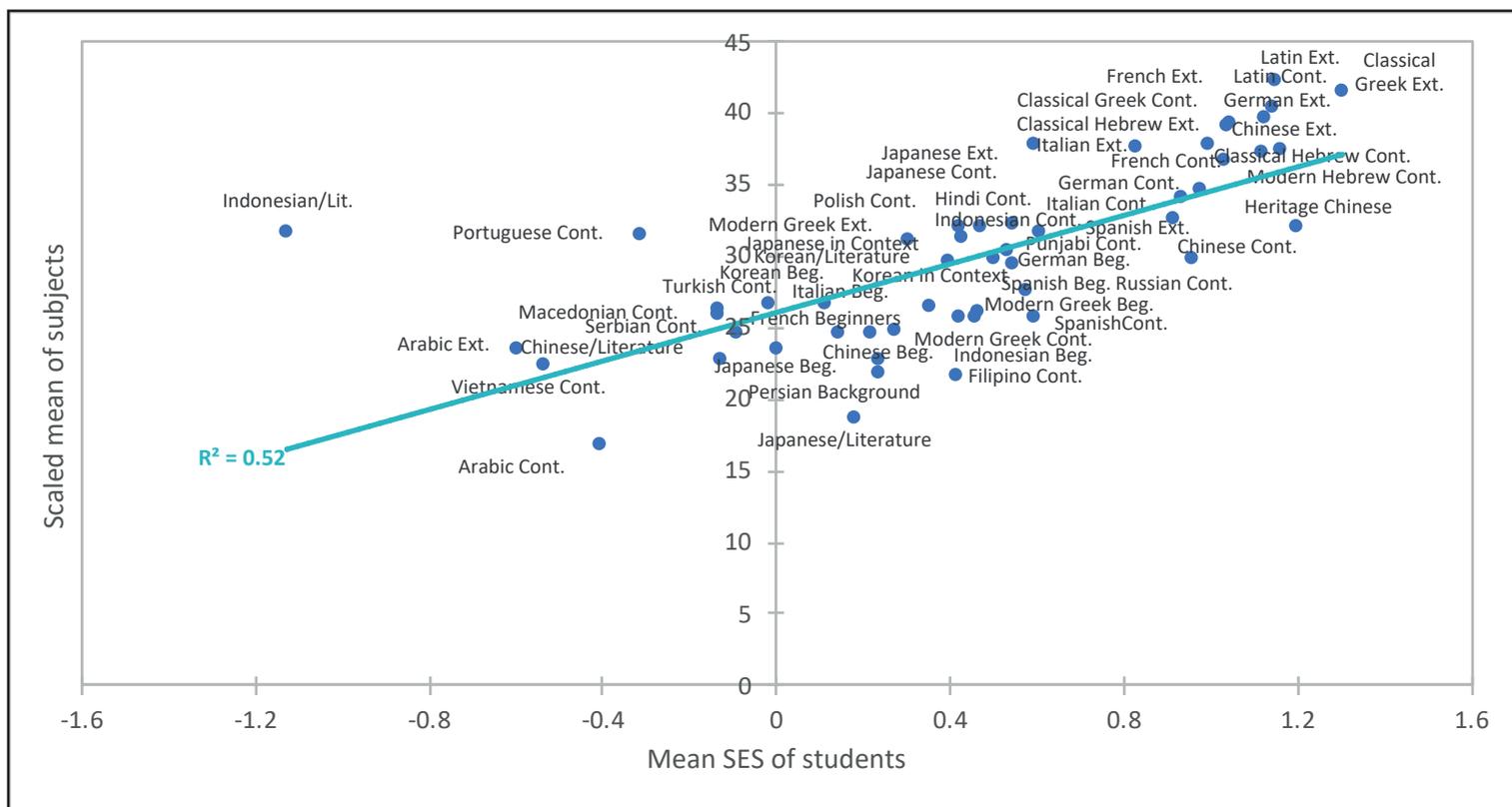


Figure 3: The NSW curriculum hierarchy (select languages)

In relation to VET subjects, it is evident that overall they are studied by students of lesser average socio-economic status. Though, a patterning does seem to also exist within these subjects between more service-orientated and manual fields of work, and newer industries (animation) and those with a certain social caché (entertainment,

tourism). In relation to figure 3 we have plotted only VET subjects with an optional examination that can then be counted towards the HSC and an ATAR. It is important to note that not all students taking these courses opt to be eligible for an ATAR.

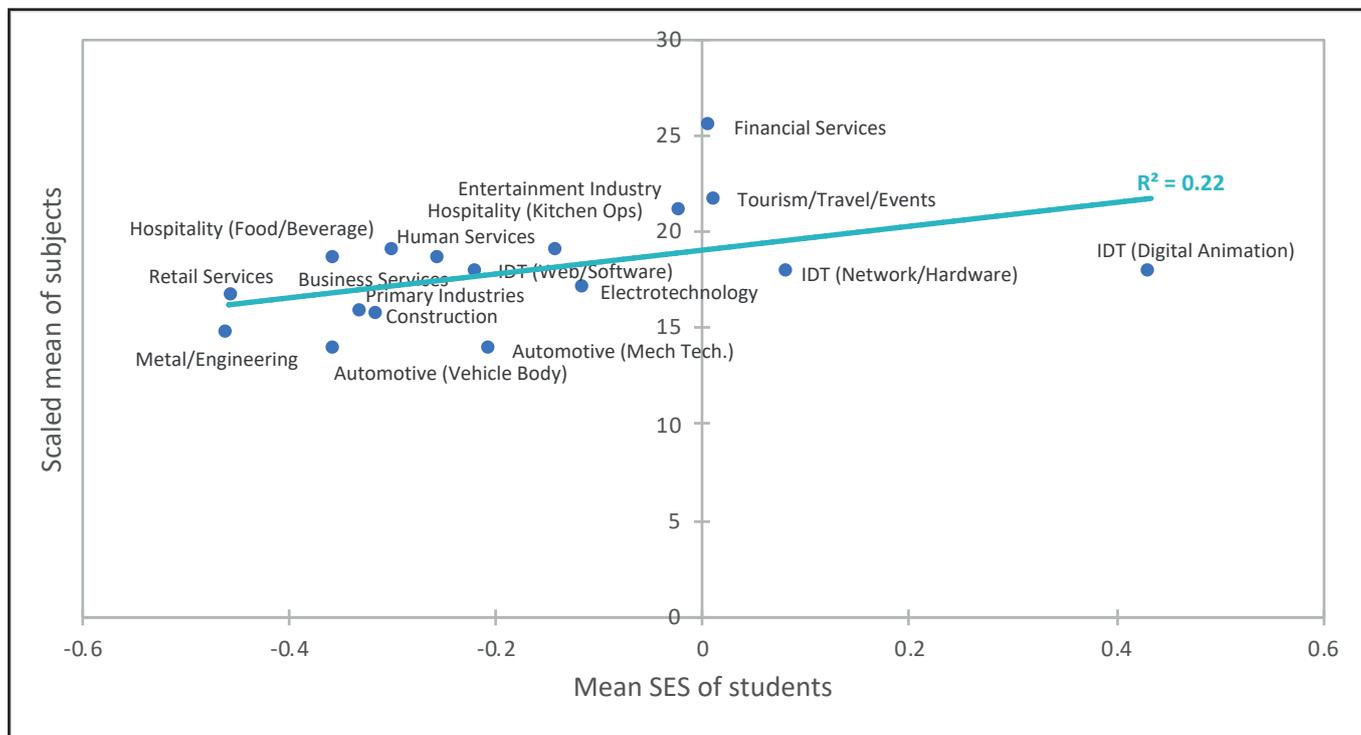


Figure 4: The NSW curriculum hierarchy (VET subjects)

As a vehicle of educational achievement, these results illustrate that the school curriculum is indeed not neutral. Instead, it operates as a system to reinforce social status.

To improve equity, we need to ensure that all students have access to higher-status powerful subjects or that all subjects are valued equally.

“As a vehicle of educational achievement, these results illustrate that the school curriculum is indeed not neutral. Instead, it operates as a system to reinforce social status.”

Key finding 2: Access to the hierarchy is linked to earlier school achievement

“Student average NAPLAN results in Year 3 account for 88% of the predicted power of the HSC subjects in the hierarchy that students will study in Year 12.”

Early school achievement is strongly related to the subjects in the hierarchy that students will go on to study in Year 12. We found that there is a suite of subjects that students who achieved scores in the top 20% of Year 3 NAPLAN went on to study at the end of the HSC, and that these subjects tended to be powerful in the hierarchy. Similarly, there were subjects that students achieving scores in the lowest 20% of Year 3 NAPLAN went on to study at the end of the HSC, and these subjects tended to be less powerful in the hierarchy. This relationship was observed across all NAPLAN years to varying, though still highly significant, strengths.

This finding suggests that students' access to powerful subjects can be predicted by their earliest available school testing. In the interests of equality of opportunity this is a pattern that needs to be disrupted. On one hand, this finding may suggest that the system is good at ensuring

that students who are achieving at the top of their cohort in Year 3, and later years, are supported to maintain strong achievement. However, the finding also indicates that the opposite is equally true. Students achieving at the lower end of their cohort are not supported to improve relative to their peers. Compounding this finding is that it is generally accepted that students' NAPLAN results are strongly related to their family socio-economic status.

Student average NAPLAN results in Year 3 account for 88% of the predicted power of the HSC subjects in the hierarchy that students will study in Year 12 (figure 5). The average reading score in Year 3 NAPLAN accounts for 87% of the likelihood of the power of the subjects that students will study in Year 12. This is 85% for numeracy. The relationships remain significant through to Year 9 NAPLAN, particularly for numeracy and when combined.

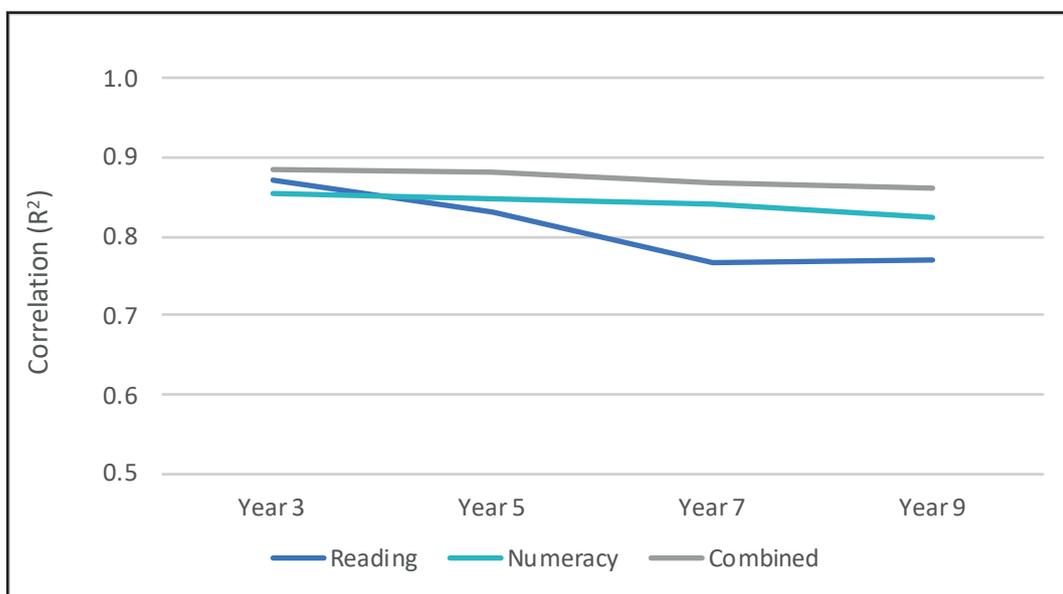


Figure 4: The NSW curriculum hierarchy (VET subjects)

A similarly significant relationship exists in relation to the average grades students received in their HSC subjects (figure 6). Here, Year 3 reading in NAPLAN, and the combined reading and numeracy score, accounts for on

average approximately 50% of the average grades in a given subject. Across the years of NAPLAN testing, this relationship remains around the 40% likelihood mark.

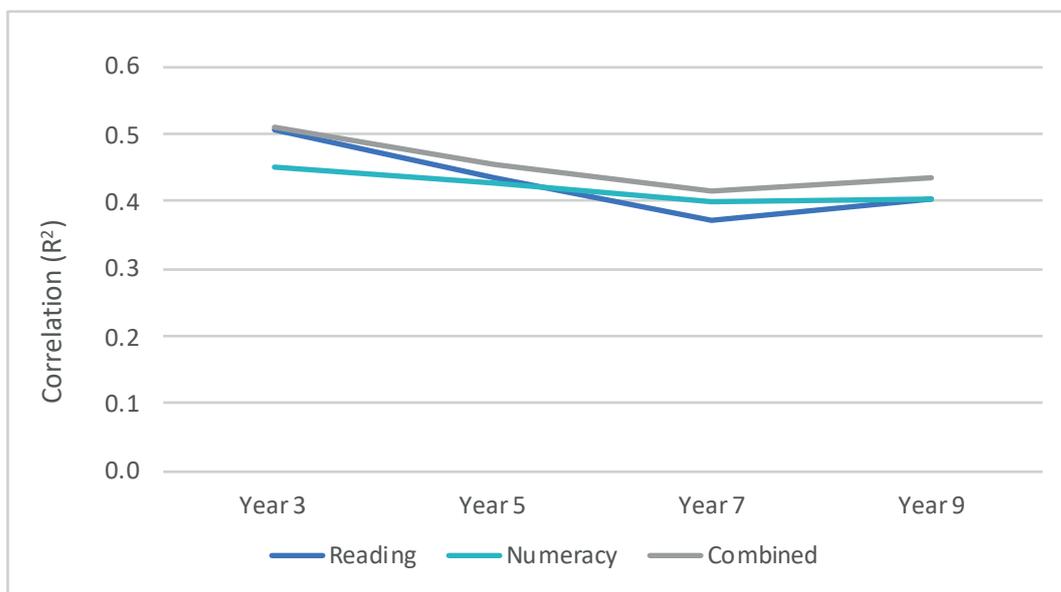


Figure 6: The average NAPLAN score for students per average grade in their HSC subject studied

On a subject by subject basis, there is a clear relationship between students scoring in the top or lower 20% of their cohort in NAPLAN in a given year, and the position of subjects studied in the hierarchy in the HSC. In Figures 7-9 below, green refers to students who, on average, scored in the top 20% of NAPLAN within the HSC cohort of a given subject. Red refers to the lower 20% of NAPLAN within the HSC cohort of a given subject. The direction of the arrows indicates the quintile of the NAPLAN relationship.

The subjects higher on the hierarchy (figure 2) are coloured green, and those lower on the hierarchy coloured red in figure 7. Subjects are also listed here in order of 'power' on the hierarchy. There are clearly a number of subjects, at either end of the hierarchy, where students studying these subjects overwhelmingly relate to high and low reading and/or numeracy, and this can be observed as far back as Year 3. Over the corresponding nine years of schooling, the predictive influence of Year 3 NAPLAN has not been disrupted.

	Top Quintile	Composition of HSC subject enrolment who were in the top 20% of NAPLAN in the given school year.
	Second Quintile	Composition of HSC subject enrolment who were in the second quintile of NAPLAN in the given school year.
	Third Quintile	Composition of HSC subject enrolment who were in the middle quintile of NAPLAN in the given school year.
	Fourth Quintile	Composition of HSC subject enrolment who were in the fourth quintile of NAPLAN in the given school year.
	Bottom Quintile	Composition of HSC subject enrolment who were in the lowest 20% of NAPLAN in the given school year.

	Year 3		Year 5		Year 7		Year 9	
	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy
Mathematics Ext. 2	↑	↑	↑	↑	↑	↑	↑	↑
Mathematics Ext. 1	↑	↑	↑	↑	↑	↑	↑	↑
Music Ext.	↑	↑	↑	↑	↑	↑	↑	↑
Music 2	↑	↑	↑	↑	↑	↑	↑	↑
English Ext. 1	↑	↑	↑	↑	↑	↑	↑	↑
Physics	↗	↑	↗	↑	↗	↑	↗	↑
Chemistry	↗	↑	↗	↑	↗	↑	↗	↑
English Ext. 2	↑	↑	↑	↗	↑	↗	↑	↗
Economics	↗	↗	↗	↗	↗	↗	↗	↗
Mathematics	↗	↗	↗	↑	↗	↑	↗	↑
English (Advanced)	↑	↗	↑	↗	↑	↗	↑	↗
History Ext.	↑	↗	↑	↗	↑	↗	↑	↗
Music 1	↘	↘	↘	↘	↘	↘	↘	↘
Engineering	↗	↗	↗	↗	↗	↗	↗	↗
Religion II	↘	↘	↘	↘	↘	↘	↘	↘
Visual Arts	↘	↓	↘	↘	↘	↘	↘	↘
Software Design/Devt	↘	↗	↘	↗	↘	↗	↘	↗
Biology	↗	↘	↗	↗	↗	↗	↗	↗
Religion I	↗	↗	↗	↗	↗	↗	↗	↗
Modern History	↗	↘	↗	↘	↗	↘	↗	↘
Legal Studies	↘	↘	↘	↘	↘	↘	↘	↘
Geography	↘	↘	↘	↘	↘	↘	↘	↘
Earth/Env'tal Science	↘	↘	↘	↘	↘	↘	↘	↘
Drama	↘	↘	↘	↘	↘	↘	↘	↘
Ancient History	↘	↘	↘	↘	↘	↘	↘	↘
Business Studies	↘	↘	↘	↘	↘	↘	↘	↘
Society/Culture	↘	↘	↘	↘	↘	↘	↘	↓
Design/Tech	↓	↘	↓	↘	↓	↘	↓	↘
PD/Health/PE	↘	↘	↘	↘	↘	↘	↘	↘
Info Processes/Tech	↘	↘	↘	↘	↘	↘	↘	↘
Mathematics Gen. 2	↘	↘	↘	↘	↘	↘	↘	↘
Textiles/Design	↘	↓	↘	↓	↘	↓	↘	↓
Dance	↘	↘	↘	↘	↘	↓	↘	↓
Agriculture	↓	↓	↓	↓	↓	↓	↓	↓
English (Standard)	↓	↓	↓	↓	↓	↓	↓	↓
Senior Science	↓	↓	↓	↓	↓	↓	↓	↓
Food Technology	↓	↓	↓	↓	↓	↓	↓	↓
Industrial Technology	↓	↓	↓	↓	↓	↓	↓	↓
Comm/Family Studies	↓	↓	↓	↓	↓	↓	↓	↓
Aboriginal Studies	↓	↓	↓	↓	↓	↓	↓	↓
ESL	↓	↗	↓	↓	↓	↓	↓	↗

Figure 6: The average NAPLAN score for students per average grade in their HSC subject studied

	Year 3		Year 5		Year 7		Year 9	
	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy
Chinese Ext.	↑	↑	↑	↑	↗	↗	↗	↗
Latin Ext.	↑	↑	↑	↑	↑	↑	↑	↑
Latin Cont.	↑	↑	↑	↑	↑	↑	↑	↑
French Ext.	↑	↑	↑	↗	↑	↑	↑	↑
Modern Hebrew Cont.	↗	↗	↗	↗	↗	↗	↗	↗
German Ext.	↑	↑	↑	↑	↑	↑	↑	↑
French Cont.	↑	↗	↑	↗	↑	↑	↑	↗
German Cont.	↑	↗	↑	↑	↑	↑	↑	↑
Japanese Ext.	↗	↑	↑	↑	↑	↑	↑	↑
Italian Ext.	↗	↑	↑	↗	↑	↑	↑	↗
Chinese in Context	↗	↗	↗	↑	↗	↑	↗	↑
Chinese Cont.	↗	↗	↗	↗	↗	↗	↗	↗
Italian Cont.	↗	↗	↗	↗	↗	↗	↗	↗
German Beg.	↗	↗	↗	↗	↗	↗	↗	↗
Indonesian Cont.	↗	↗	↗	↗	↗	↗	↗	↗
Indonesian Beg.	↗	↗	↗	↗	↗	↗	↗	↗
Japanese Cont.	↗	↗	↗	↗	↗	↗	↗	↗
Spanish Beg.	↗	↗	↗	↗	↗	↗	↗	↗
Modern Greek Beg.	↓	↓	↗	↗	↗	↗	↗	↗
SpanishCont.	↓	↓	↓	↓	↓	↓	↓	↓
Spanish Ext.	↗	↗	↗	↓	↓	↓	↓	↓
Korean in Context	↗	↗	↓	↓	↓	↓	↓	↓
Modern Greek Cont.	↓	↓	↓	↓	↓	↓	↓	↓
Chinese Beg.	↗	↗	↗	↗	↗	↗	↗	↗
French Beginners	↗	↗	↗	↓	↓	↓	↓	↓
Italian Beg.	↗	↓	↗	↓	↓	↓	↓	↓
Korean/Literature	↗	↗	↗	↗	↓	↓	↓	↓
Japanese Beg.	↗	↗	↗	↗	↗	↗	↗	↗
Korean Beg.	↗	↗	↗	↗	↗	↗	↗	↗
Chinese/Literature	↗	↓	↓	↓	↓	↓	↓	↓
Turkish Cont.	↓	↓	↓	↓	↓	↓	↓	↓
Arabic Cont.	↓	↓	↓	↓	↓	↓	↓	↓
Vietnamese Cont.	↓	↓	↓	↗	↓	↓	↓	↗
Arabic Ext.	↓	↓	↓	↓	↓	↓	↓	↓

Figure 8: Relationship between NAPLAN achievement and studying powerful HSC subjects (languages). Subject earlier achievement by subject NAPLAN averages. Top 20% in NAPLAN coded green, lower 20% coded red

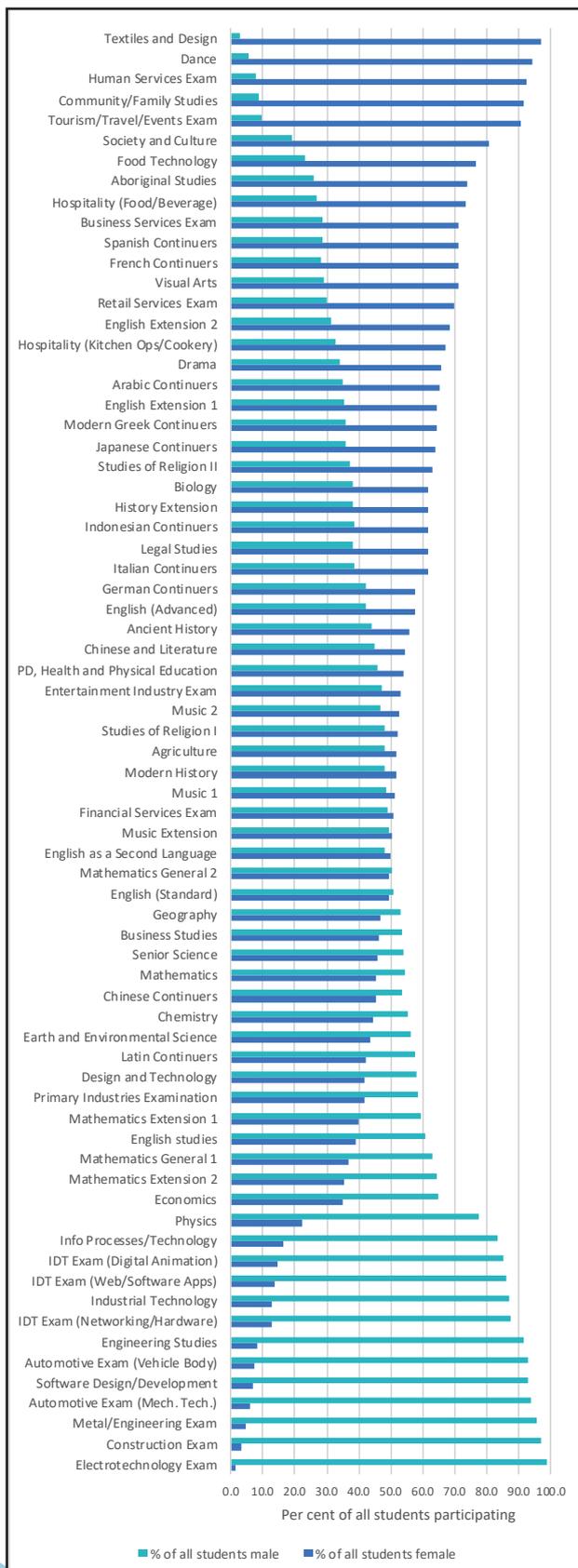
	Year 3		Year 5		Year 7		Year 9	
	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy	Reading	Numeracy
IDT (Network/Hardware)	↑	↑	↑	↑	↑	↑	↑	↑
Financial Services	↑	↑	↑	↑	↑	↑	↑	↑
IDT (Digital Animation)	↗	↑	↑	↑	↑	↑	↑	↑
Tourism/Travel/Events	↑	↗	↑	↗	↑	↗	↗	↗
Human Services	↗	↗	↗	↗	↗	↗	↗	↗
IDT (Web/Software)	↗	↗	↗	↗	↗	↗	↗	↗
Entertainment Industry	↑	↗	↗	↗	↗	↗	↑	↗
Hospitality (Kitchen Ops)	↗	↗	↗	↗	↗	↗	↗	↗
Hospitality (Food/Beverage)	↗	↗	↗	↓	↓	↓	↓	↓
Automotive (Mech Tech.)	↓	↓	↓	↓	↓	↓	↓	↓
Electrotechnology	↗	↑	↗	↑	↗	↑	↗	↑
Primary Industries	↗	↓	↓	↓	↓	↓	↓	↓
Business Services	↗	↓	↓	↓	↓	↓	↓	↓
Construction	↓	↓	↓	↓	↓	↓	↓	↓
Retail Services	↗	↓	↓	↓	↓	↓	↓	↓
Metal/Engineering	↓	↓	↓	↗	↓	↓	↓	↗
Automotive (Vehicle Body)	↓	↓	↓	↓	↓	↓	↓	↓

Figure 9: Relationship between NAPLAN achievement and studying powerful HSC (VET). Subject earlier achievement by subject NAPLAN averages. Top 20% in NAPLAN coded green, lower 20% coded red

“On a subject by subject basis, there is a clear relationship between students scoring in the top or lower 20% of their cohort in NAPLAN in a given year, and the position of subjects studied in the hierarchy in the HSC.”

Key finding 3: Access to subjects is still patterned by gender

“This finding highlights the perceived gendered nature of knowledge, and related careers.”



There remain subjects that are accessed strongly on grounds of gender. While this may be acceptable in some instances, there are questions to explore as to why females undertake Extension English subjects at nearly twice the rate of males, or why males study higher mathematics subjects at much higher rates than females. This finding highlights the perceived gendered nature of knowledge, and related careers. In this graph, two non-ATAR subjects – English studies and Mathematics General 1 – have been added into the list of subjects for comparative purposes.

The subjects higher on the hierarchy (figure 2) are themselves indicated with green, and those lower on the hierarchy red, tags. Overall the subjects are listed proportionally by gender ratio. It is apparent that there are powerful subjects in the hierarchy that are studied in clear gendered patterns, limiting access to powerful subjects for both boys and girls.

Note: Subjects with small numbers not represented.

Figure 10: Participation rate in selected subjects by student gender

Key finding 4: Access to subjects is patterned by location

“Students in non-metropolitan areas are studying subjects powerful in the hierarchy, that contribute to higher ATAR scores, at a lower rate than metropolitan students.”

Access to subjects in the hierarchy is patterned by the location of the school the student attends.

The subjects higher on the hierarchy (figure 2) are themselves coloured green, and those lower on the hierarchy coloured red. The Australian Bureau of Statistics Australian Statistical Geography Standard Remoteness Structure has been used to classify the location of schools that individual students attend. The analysis includes the subjects that students access by forms of distance education.

Students in non-metropolitan areas are studying subjects powerful in the hierarchy, that contribute to higher ATAR scores, at a lower rate than metropolitan students. This imbalance increases with distance.

This lower participation rate in powerful subjects impacts post school options, especially those mediated by ATAR. Similarly, university course pre-requisites often relate to these more powerful subjects. Ultimately, students cannot access university if they do not study subjects that, at the moment, facilitate a greater likelihood of entry.

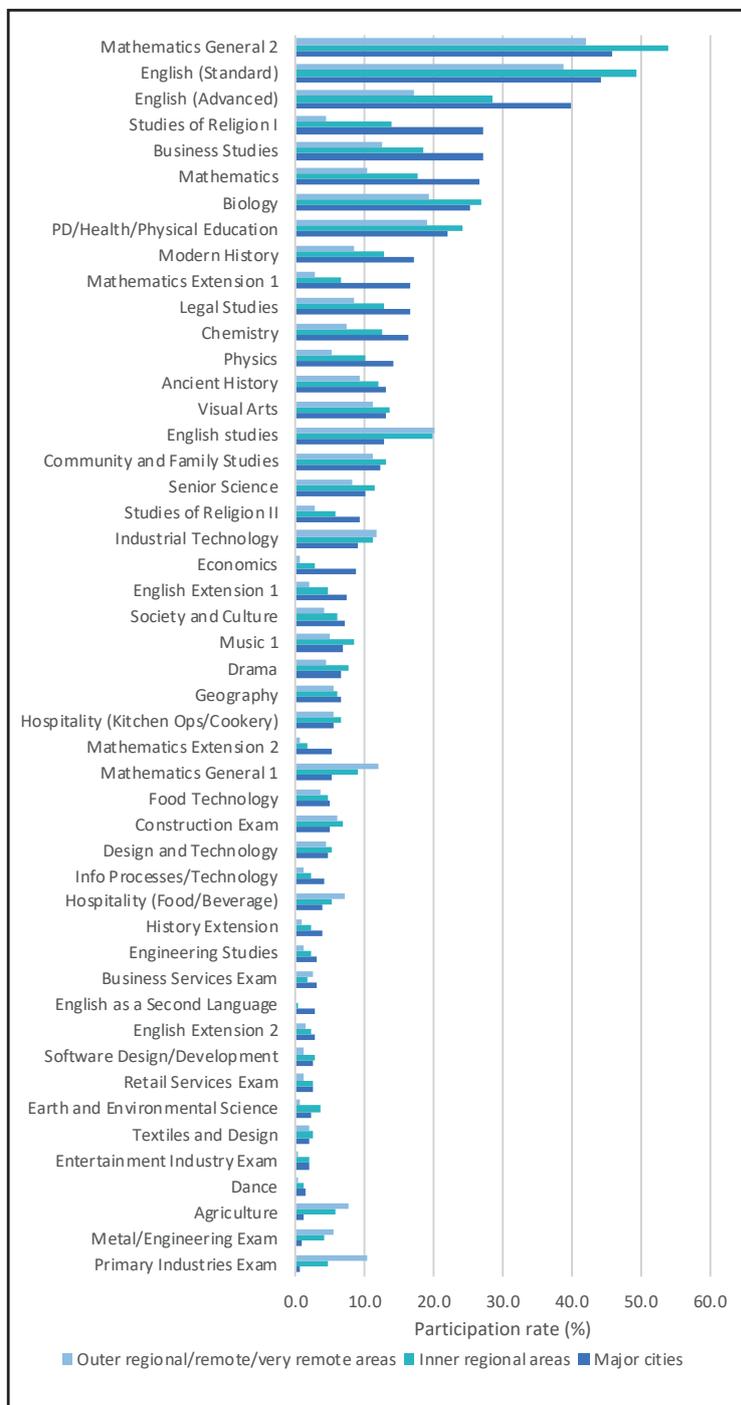


Figure 11: Participation rate in selected subjects by school location

Complex in-school decisions, as well as student aspirations, play a role in determining subjects that students study. These include access to specialist staff and beliefs about employment opportunities. Theoretically at least all subjects are available to students as they can, if need be, be accessed via distance education.

We need to further investigate the influences upon student subject decisions and why students in non-metropolitan areas are not studying powerful subjects at a similar rate to their city peers.

Notes:

- 1) In this, and following, sections subjects not included previously, including 'English Studies' and 'Mathematics General 1', have been included. These subjects were previously not included as they did not contribute to an ATAR, and as such could not be plotted on the hierarchy. They have been included here as they clearly are studied overwhelmingly by students of lesser socio-economic status.
- 2) Remoteness structure is a classification of the Australian Statistical Geography Standard. In this classification, remoteness areas are based on the Accessibility/Remoteness Index of Australia (ARIA+) (ABS, 2018a) and measure the remoteness of a point to the nearest urban centre in each of five categories (ranging from least to furthest distance).
- 3) Subjects with small numbers not represented.

“Lower participation rates in powerful subjects impact post school options, especially those mediated by ATAR.”

Key finding 5: Student family characteristics relates to students' access to, and achievement in, the hierarchy

“Parental education and occupation exert the greatest influence on students' outcomes in the HSC.”

Student socio-economic status has been shown to influence subjects studied in the hierarchy. In this section, we illustrate the relationship between parental education and occupation on the combined power of subjects students study in the HSC (figures 12 & 13), and the average results students achieve in their HSC subjects (figures 14 & 15). The results indicate that children of parents with a higher level of education, and occupation, study subjects with a combined higher power in the HSC (figures 12 & 13). Similarly, we see that children of parents with a higher level of education, and occupation, achieve higher grades in their HSC (figures 14 & 15).

These results indicate that parental education and occupation exert the greatest influence on students' outcomes in the HSC. Furthermore, we also see that girls, on average, achieve higher grades than boys (figures 14 & 15).

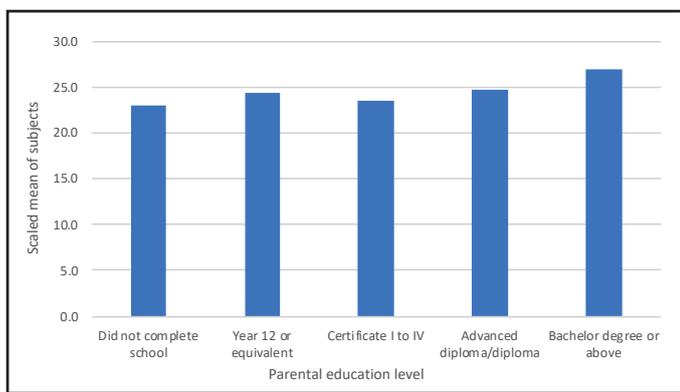


Figure 12: Average power of subjects studied by parental education.

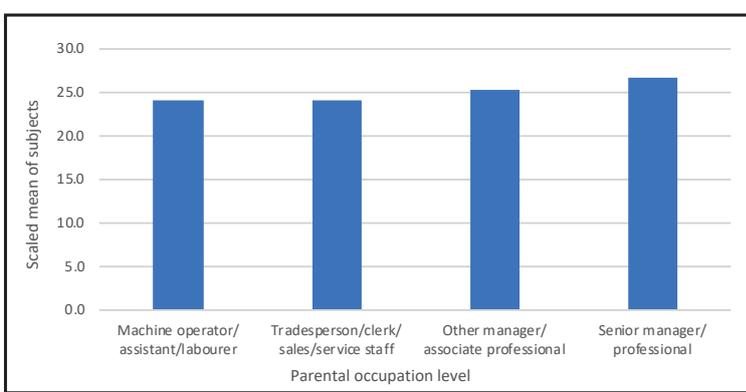


Figure 13: Average power of subjects studied by parental occupation

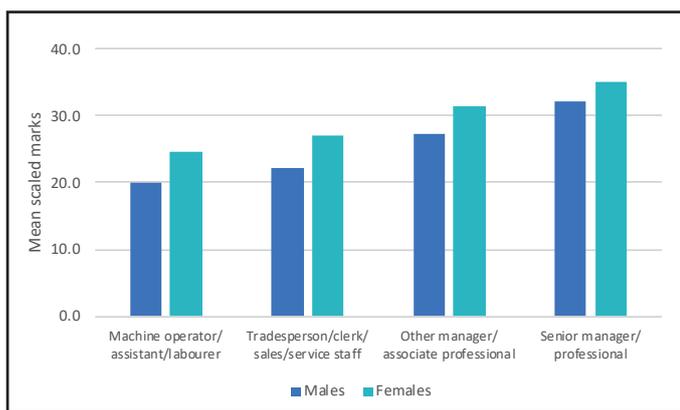


Figure 14: Students' mean marks by parental occupation

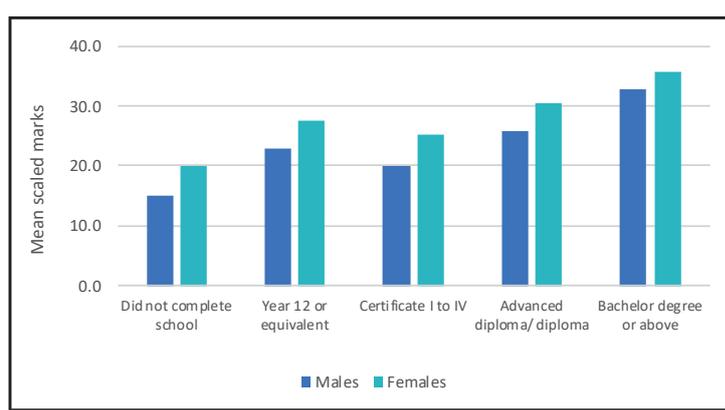


Figure 15: Students' mean marks by parental education

Key finding 6: Vocational education and training options are increasingly studied by lower SES students and students from rural areas

“Overall participation rates in VET are significantly lower for students attending schools in more advantaged decile areas.”

Vocational education and training (VET) subjects have been shown to occupy a lesser powerful location on the curriculum hierarchy (figure 2). The results also illustrate that VET subjects are studied at a higher rate the further a student's school is located from the city, and by students of lower socio-economic status (figure 16).

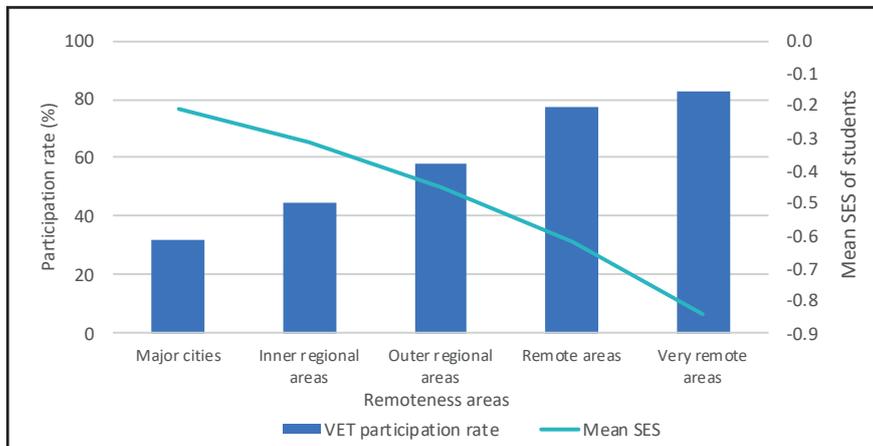


Figure 16: Student VET participation rate by school location and the mean SES of students participating in VET subjects

The findings also indicate that VET subjects are studied at a higher rate in schools located in the less advantaged areas (figure 17). The relative advantage of areas is expressed by the Socio-Economic Indexes for Areas (SEIFA) Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) (ABS, 2018b). SEIFA IRSAD is one of four indexes produced by the ABS to investigate the economic and social conditions affecting the people and households within areas. Based on Census data, it ranks each area on a continuum from most disadvantaged to most advantaged. Here, the location of schools' individual students attend has been mapped to this scale. This enables consideration of variation across cities, made up of multiple deciles, as well as across geographic location.

Furthermore, the average socio-economic status of the students studying VET subjects is related to the relative advantage and disadvantage of areas that their schools are located in. Overall participation rates in VET are significantly lower for students attending schools in more advantaged decile areas.

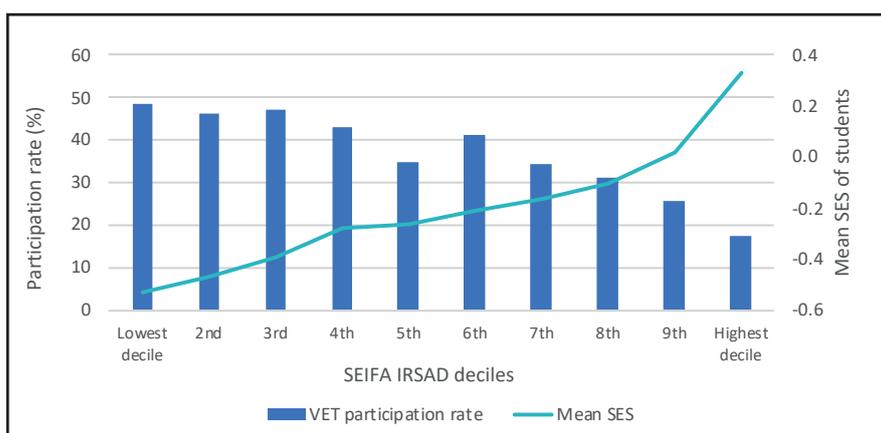


Figure 17: Student VET participation rates by school location, the relative advantage-disadvantage of the area the student's school is located in, and mean SES of students participating in VET subjects

Key finding 7: Student completion rates are related to student location and student family characteristics

“Attending a school in a more advantaged location provides greater access to powerful subjects in the hierarchy.”

While to be expected, figure 18 illustrates how students from major cities dominate the candidature, and how the drivers of general socio-economic status (parental occupation and education) are not distributed evenly. This raises questions of whose interests are served by the curriculum system, and the challenges for spatial justice in the curriculum to represent and support the least advantaged.

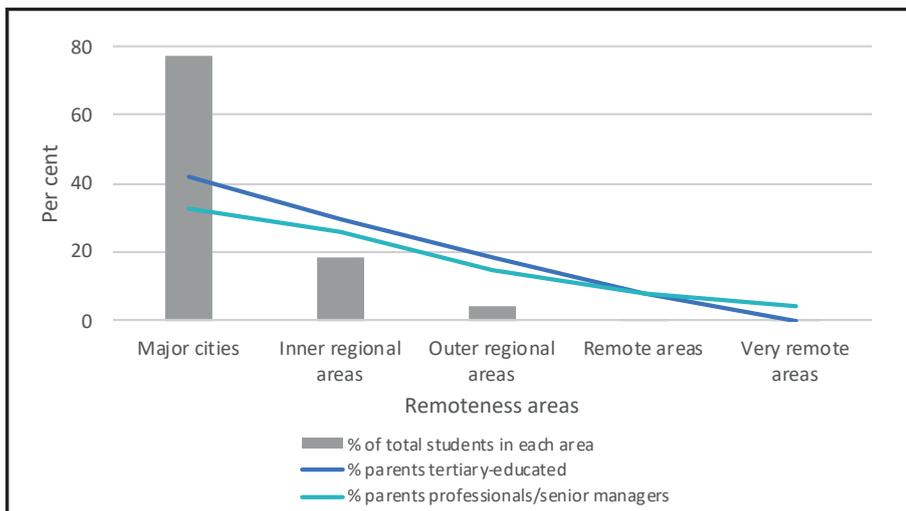


Figure 18: Students completing the HSC (2017) in each school location by parental occupation and education

In Figure 19 we see that a higher percentage of students complete Year 12 in schools in more advantaged areas, and these students are more likely to have parents with a higher level of education and occupation. The declines observed are inclusive of cities, as cities are themselves diverse in terms of the relative advantage-disadvantage of areas. We can see here that completing Year 12 is still associated with both parental background and where one lives.

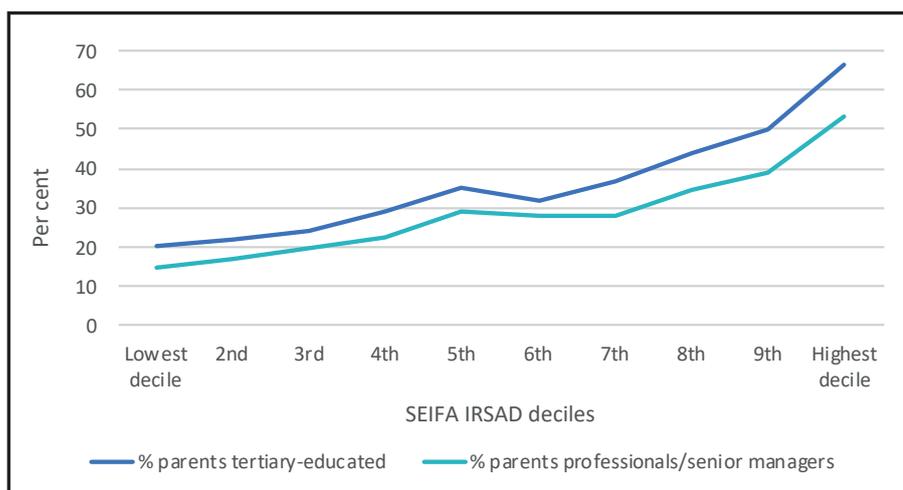


Figure 19: Students completing the HSC (2017) by the relative advantage-disadvantage of the area the school is located in and parental occupation and education

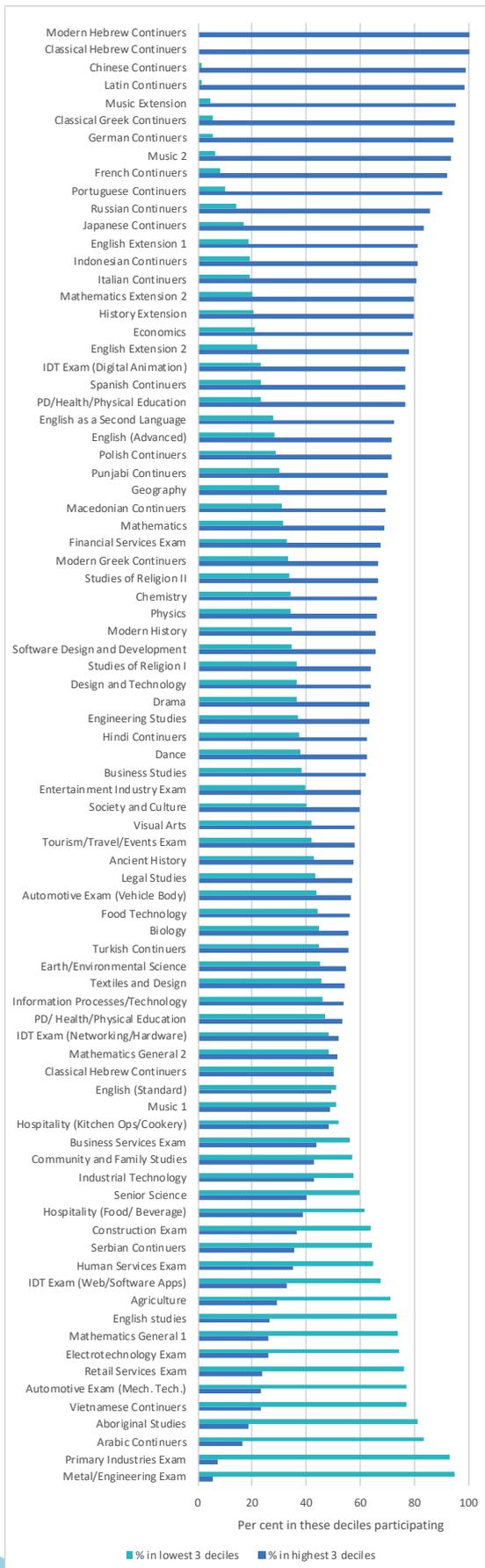


Figure 20 reinforces that access to the hierarchy is also related to the relative advantage and disadvantage of the areas their schools are located in. Attending a school in a more advantaged location provides greater access to powerful subjects in the hierarchy. Location plays a role at the subject level.

Note: Subjects with small numbers not represented.

Figure 20: Subject access by the relative advantage-disadvantage of the area the school is located in (select subjects)

“A higher percentage of students complete Year 12 in schools in more advantaged areas, and these students are more likely to have parents with a higher level of education and occupation.”

Key finding 8: Hierarchies exist within subject options

“Students of higher socio-economic status are accessing the more powerful version of each subject than their peers of lower socio-economic status.”

Hierarchies also exist within subject areas, referred to as 'Key Learning Areas' (KLA) in NSW. Within key learning areas there exist significant differences between individual subjects, with subject options higher in the curriculum hierarchy and options lower on the curriculum hierarchy (figure 2). For instance, the subject English has the option of 'Advanced English' which is situated higher on the curriculum hierarchy than the option of 'Standard English' or 'English Studies'.

Access to the options within key learning areas are clearly associated with the average socio-economic status of students. We can observe that students of higher socio-economic status are accessing the more powerful version of each subject than their peers of lower socio-economic status.

Access to these options is also associated with the relative advantage and disadvantage of the area of the school that students attend, and their geographic location. The results indicate that students in areas of greater relative advantage, and in cities, with a higher average socio-economic status, access the more powerful version of each subject than their peers in less advantaged areas, in rural areas, and of lesser socio-economic status.

Here we use four 'Key Learning Area' examples to illustrate how access to subjects in different levels of the hierarchy are organised: English, Mathematics, Sciences, and Economics. Within each there is a clear differentiation between who studies which subject in the KLA by socio-economic status, location and relative advantage-disadvantage of the area the school is located in. In terms of the implications of these results, we feel a position to simply remove 'advanced' options from the curriculum would be an oversimplification of the issues involved. Instead, the results raise issues relating to equitable participation in 'advanced' options.

English

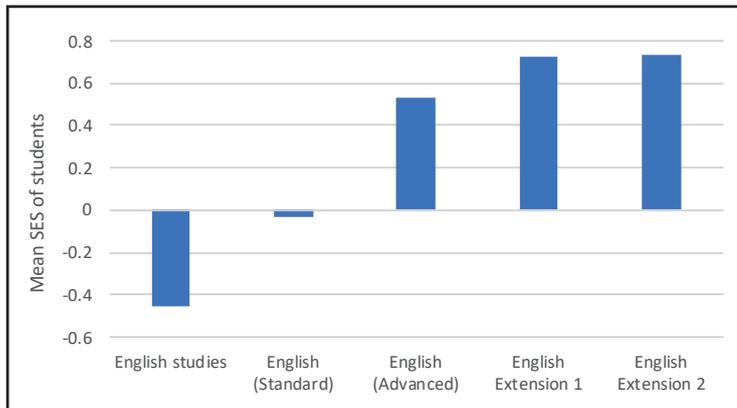


Figure 21: Access to the subjects in the English Key Learning Area by the mean socio-economic status of students participating

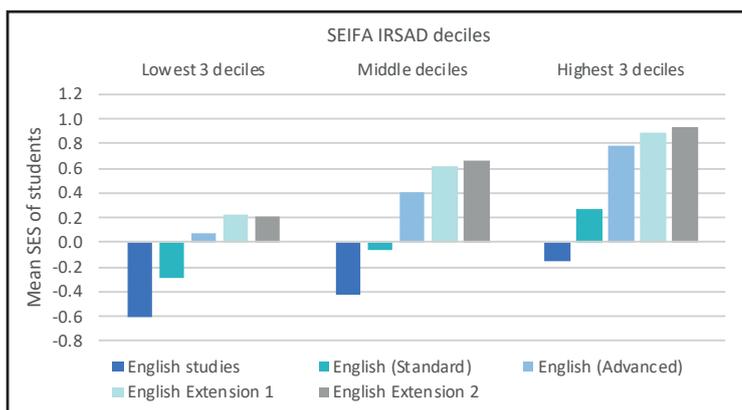


Figure 22: Access to the subjects in the English Key Learning Area by the relative advantage-disadvantage of the area the school is located in, and the mean socio-economic status of students participating

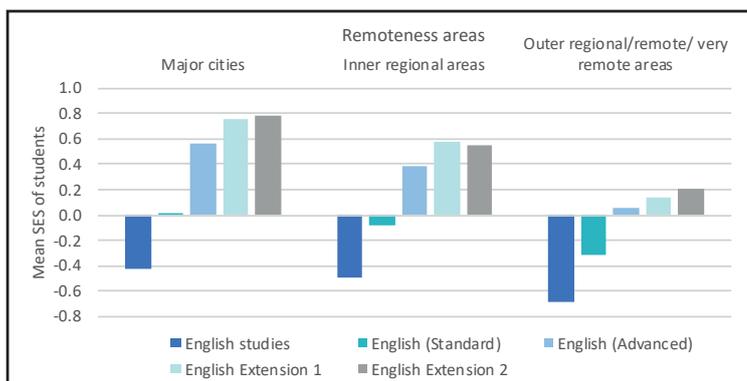


Figure 23: Access to the subjects in the English Key Learning Area by school location, and the mean socio-economic status of students participating

Mathematics

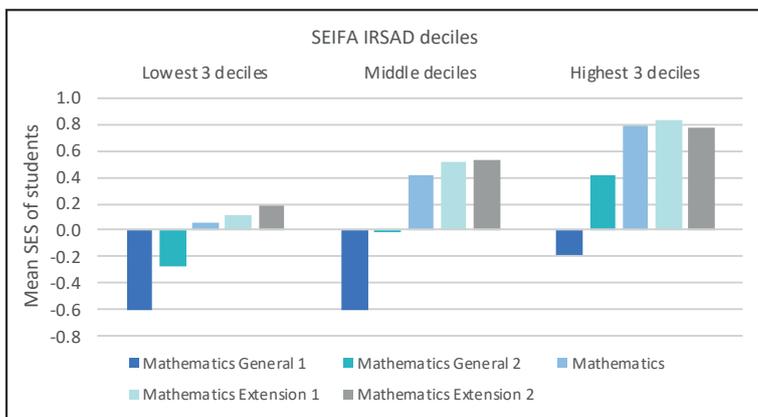


Figure 24: Access to the subjects in the Mathematics Key Learning Area by the mean socio-economic status of students participating

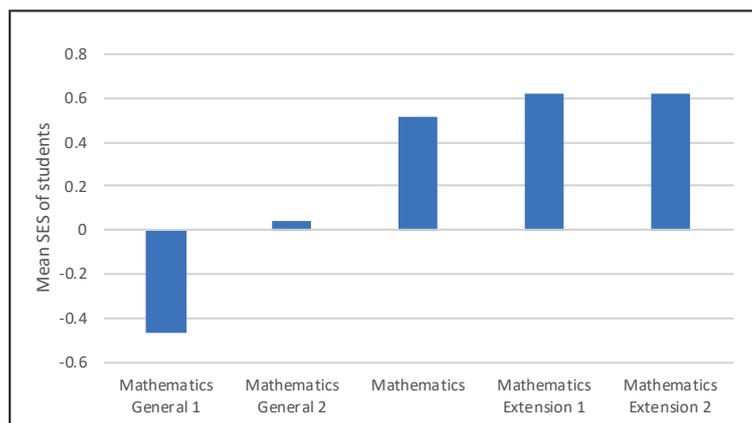


Figure 25: Access to the subjects in the Mathematics Key Learning Area by the relative advantage-disadvantage of the area the school is located in, and the mean socio-economic status of students participating

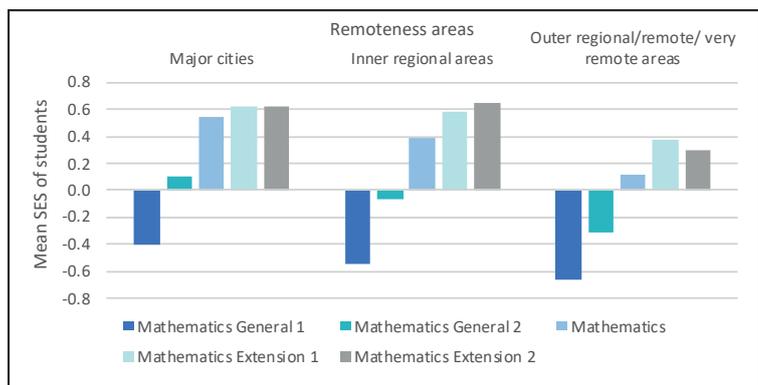


Figure 26: Access to the subjects in the Mathematics Key Learning Area by school location, and the mean socio-economic status of students participating

Sciences

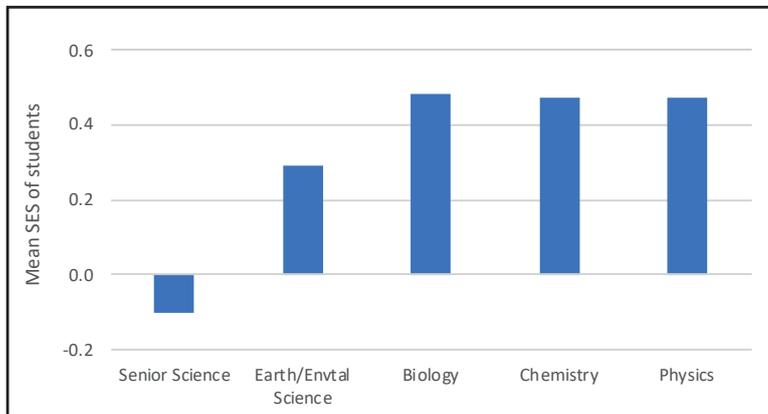


Figure 27: Access to the subjects in the Science Key Learning Area by the mean socio-economic status of students participating

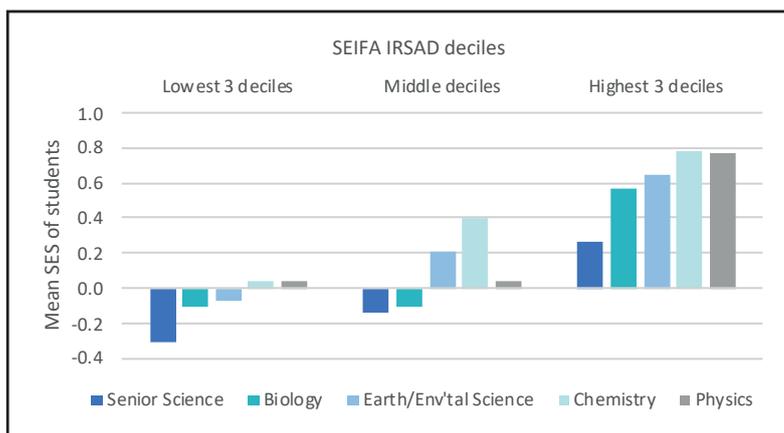


Figure 28: Access to the subjects in the Science Key Learning Area by the relative advantage-disadvantage of the area the school is located in, and the mean socio-economic status of students participating

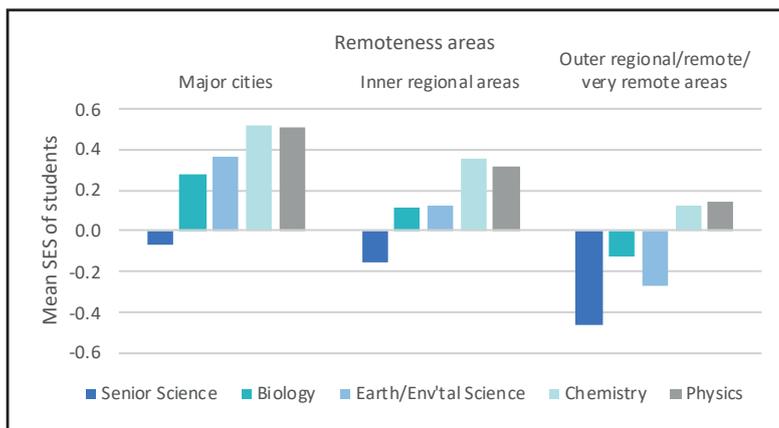


Figure 29: Access to the subjects in the Science Key Learning Area by school location, and the mean socio-economic status of students participating

Economics

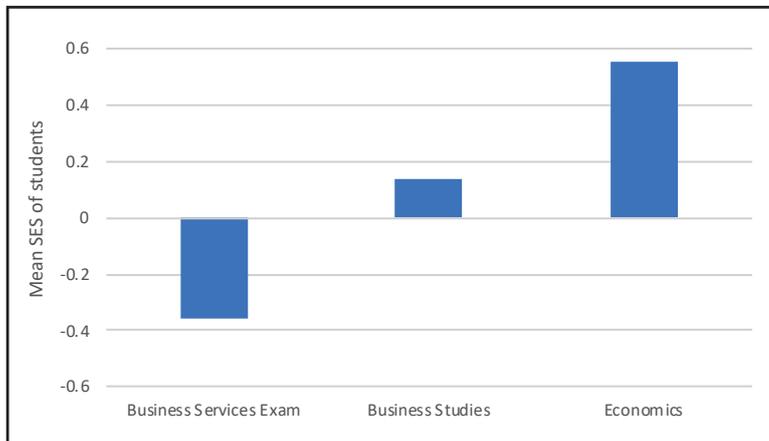


Figure 30: Access to the subjects in the Economics discipline within the Human Society and its Environment Key Learning Area by the mean socio-economic status of students participating

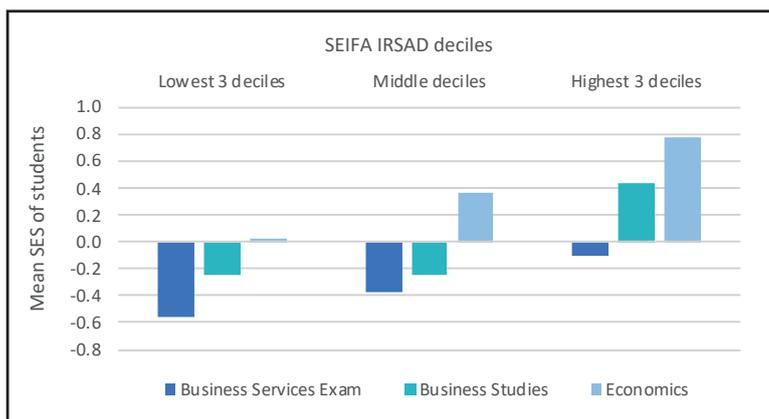


Figure 31: Access to the subjects in the Economics discipline within the Human Society and Its Environment Key Learning Area by the relative advantage-disadvantage of the area the school is located in, and the mean socio-economic status of students participating

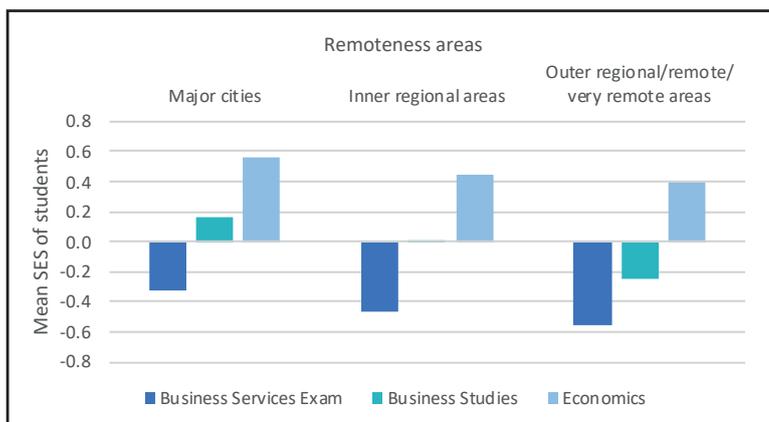


Figure 32: Access to the subjects in the Economics discipline within the Human Society and its Environment Key Learning Area by the school location, and the mean socio-economic status of students participating

References

- Australian Bureau of Statistics (2018a). *Australian Statistical Geography Standard: Volume 5 - Remoteness structure*, July 2016 (cat. no. 1270.0.55.005). Canberra: ABS.
- Australian Bureau of Statistics (2018b). *Census of Population and Housing: Socio-Economic Indexes for Areas, Australia*, 2016 (cat. no. 2033.0.55.001). Canberra: ABS.
- Bleazby, J. (2015). Why some school subjects have a higher status than others: The epistemology of the traditional curriculum hierarchy. *Oxford Review of Education*, 41(5), 671-689.
- Connell, R. W., Ashenden, D. J., Kessler, S., & Dowsett, G. W. (1982). *Making the difference: Schools, families and social division*. Sydney: Allen & Unwin.
- McMillan, J., Beavis, A., & Jones, F. L. (2009). The AUSEI06: A new socioeconomic index for Australia. *Journal of Sociology*, 45(2), 123-149.
- Merola, S. S. (2005). The Problem of Measuring SES on Educational Assessments. *Paper presented at the 100th Annual Meeting of the American Sociological Association*, Philadelphia, United States.
- Luke, A., Woods, A., & Weir, K. (2013). Curriculum Design, Equity and the Technical Form of the Curriculum. In A. Luke, A. Woods & K. Weir (Eds.), *Curriculum, Syllabus Design and Equity: A primer and model* (pp. 6-39). NY: Routledge.
- Roberts, P. (2016). Place, rural education and social justice: A study of rural teaching and curriculum politics. (Unpublished PhD dissertation). Charles Sturt University, Wagga Wagga.
- Teese, R., Davies, M., Charlton, M. & Polesel, J. (1995). *Who wins at school? Boys and girls in Australian secondary education*. Department of Education Employment and Training. Canberra: AGPS.
- Teese, R., Lamb, S., & Helme, S. (2009). Hierarchies of culture and hierarchies of context in Australian secondary education. In W. Melzer & R. Tippelt (Eds.), *Cultures of Education: Proceedings of the 21st. Congress of the German Educational Research Association* (pp. 71-92). Opladen, Germany: Barbara Budrich Publishers.
- Teese, R. (2000). *Academic Success and Social Power: Examinations and Inequality*. North Melbourne: Australian Scholarly Publishing.
- Teese, R. (2013). *Academic Success and Social Power: Examinations and Inequality* (2nd ed.). North Melbourne: Australian Scholarly Publishing.
- Yates, L., Collins, C., & O'Connor, K. (2011). *Australia's Curriculum Dilemmas: State Cultures and Big Issues*. Carlton: Melbourne University Press.