

# UC Santa Barbara

## Library Award for Undergraduate Research Winners

### Title

THE REEMERGING SUBDISCIPLINE OF THE GEOGRAPHIES OF EDUCATION: CASE STUDY ON THE SINGAPOREAN SECONDARY SCHOOL SYSTEM

### Permalink

<https://escholarship.org/uc/item/8tf5j8wt>

### Author

Ee, Joshua Shao Hong

### Publication Date

2020-04-01



# LIBRARY AWARD FOR UNDERGRADUATE RESEARCH

**Second Place**  
Social Sciences

UC SANTA BARBARA  
Library

[www.library.ucsb.edu](http://www.library.ucsb.edu)   

## Reflecting on the Research Process

I had received the official authorization letter stating that I was approved to be an independent researcher under the UCSB Department of Geography. Coming from a single-parent family, with a father who only completed primary education, I had worked hard and saved up to come to America. That letter was therefore very encouraging. All the late nights in the library, going through the different floors to find a quiet place to study, seemed to pay off. The title of independent researcher did come with its expectations and responsibilities, but for me, it was another day in the UCSB Library Pacific View Room.

Amongst the various competencies required for independent research, a defining characteristic would be motivation. The topic had to be something that I could engage in for the months to come. Having graduated from a polytechnic in Singapore, the experiences between both my polytechnic and university years were indeed distinct. University students were more likely to be recipients of professional opportunities in potentially lucrative careers, whilst polytechnic students were generally offered technical roles. It was also not uncommon for my polytechnic peers to be perceived as less capable or intelligent. The human geographer in me was thus interested in studying how *where* one studied mattered, and the credibility of s casual assessments.

First, I had to identify the field of study – the *geographies of education*. The next step was to find the right professor to supervise and counsel me in my research, which was why I approached Professor Elizabeth Ackert from the geography department. She had done extensive research work on the realms of socioeconomic inequality and education. This began my journey towards an original and thought-provoking paper on the ‘The Geographies of Education – Case Study on the Singaporean Secondary School System’.

In an effort to expand my knowledge on the field of study, I turned to the UCSB Library Search portal and did an advanced search on educational inequity in Singapore. This meant an inquiry for modern publications (refining the timeline option; 2000 to 2020) on the relevant themes (selecting the geography and sociology subjects) by recommended scholars (identifying Singaporean authors with multiple publications). Furthermore, when my professor handed me a

key physical text, I searched for its online version so that I could show professionalism by returning the book without prompting.

As a human geographer, what was especially significant was to spatially quantify academic opportunities. When exploring the UCSB Library Articles and Databases, I discovered the OECD iLibrary database, which offered a comprehensive overview on the academic-related outcomes of 70 countries and economies. The OECD iLibrary had effectively set out the foundations for my quantitative research as I began studying data across various academic systems, and in particular, that of Singapore. The OECD reports were cross-referenced with datasets from the Singapore government so that the collaboration of sources between international organizations and local authorities would maximise the accuracy and credibility of the research.

With a plethora of information as found through the UCSB virtual services, I was presented with a bleak outlook on modern education systems. From the 2019 California college admissions scandals to the exclusive United Kingdom Oxbridge system, it became evident that socioeconomic disparities were a major cause of educational inequities. It was not just where one studied but where one was on the socioeconomic scale. One thus cannot simply assess academic outcomes to be a result of individual intelligence or merit. This systemic and widespread issue includes a range of socio-spatial and urban obstacles – particularly for disadvantaged students – such as exclusive private institutions, uneven spatial distribution of schools, expensive rent and lack of public transportation. These geographies of education show how education ultimately exists in geographies and is not independent from modern spaces of class disparities.

Improvements by education policymakers have to go beyond the level of the school and into a wider geographical scale of the neighbourhood and city. A collaboration between public sectors, including transportation and housing, would be needed to ensure a lasting reversal of education inequities. Though there is no one-size-fits-all solution and policies would be geographically tailored, fellow disadvantaged students should be encouraged that there are various options and ways forward.

# **THE REEMERGING SUBDISCIPLINE OF THE GEOGRAPHIES OF EDUCATION – CASE STUDY ON THE SINGAPOREAN SECONDARY SCHOOL SYSTEM**

*Joshua Ee Shao Hong*

*Department of Geography, University of California Santa Barbara*

---

## **1. INTRODUCTION**

The development of geography, as an academic discipline, has enabled the emergence of a wide array of cross-disciplinaries, such as geopolitics, urban geography, geographic information science and more. These specialist approaches have been useful when one requires a holistic means of tackling the complex global issues of today, which include hybrid warfare, socioeconomic inequality and climate change. In light of the current global push for improved levels of educational inequity (OECD, , recent scholarship has identified a reemergence of the *geographies of education* (Yoon *et al.*, 2018). However, there still seems to be a lack of emphasis on the geographical elements that allow for inequities to persist. If education policymakers continue to neglect the spatial unevenness of academic endeavours, maturing education systems would continue to be directed by those from higher socioeconomic classes, whilst lower status groups find themselves increasingly excluded from the spaces of higher quality education.

## **2. A DYNAMIC SUBDISCIPLINE: THE ‘GEOGRAPHIES OF EDUCATION’**

Educational equity is achieved when personal or social circumstances, such as gender, ethnicity or socioeconomic status (SES), are not limitations to the academic potential and outcomes of students (OECD, 2012). Current studies have furthermore divided students into advantaged<sup>1</sup> and disadvantaged<sup>2</sup> binaries, whereby students from disadvantaged backgrounds have a harder time realising their academic aspirations due to socio-spatial obstacles. The growing international effort to create more equitable and high-performing education systems is thus driven by a desire to empower these disadvantaged students, which is a considerable population (OECD, 2012).

This is where the subdiscipline of the geographies of education comes in, to show that it is not only personal or social circumstances that affect academic outcomes, but geographical conditions as well. This matters as education ultimately exists within geographies and it is not independent from modern spaces of socioeconomic inequality (Raffo, 2011). Despite it having first surfaced in the 1970s (Waters, 2018), it was not until the 21st century that analysis into the geographies of education became an integral part of education policy (Yoon *et al.*, 2018). Additionally, this subdiscipline is aligned and in some ways, influenced, by an older and more established subdiscipline - the sociology of education (Waters, 2018). To better understand just how dynamic the geographies of education is - and how it applies to educational equity - a few notable theories can be highlighted to show the link between spatial unevenness and educational inequity. These include the (1) conflict theory, (2) maximally maintained inequality (MMI), (3) effectively maintained inequality (EMI), and (4) opportunity hoarding.

---

<sup>1</sup> There are a variety of ways to define advantage, such as students from high-income families, with parents who had tertiary education, or are of the majority ethnicity.

<sup>2</sup> Disadvantage includes definitions of students from low-income families, with parents who did not have tertiary education or are of the minority ethnicity.

***Conflict Theory.*** The conflict theory asserts that status groups within a society are in a struggle for advantage, and that status groups utilise organisations and systems to secure prestige and maximise rewards, which are scarce resources (Collins, 1971). Status groups are formed when there are similarities in lifestyles and experiences, based on economic, social and geographic conditions (Collins, 1971). The geographic situation is thus of interest, whereby the preservation of the symbolic hierarchy of the status group lies in their collective ability to maintain spatial distance from other classes, which may include the concentration of resources within an administrative boundary or institution. This creates a form of exclusion and closure, as lower-status groups, or ‘outsiders’, compete for the same limited resources that high-status groups may monopolise to ensure the longevity and prosperity of their class (Fiel, 2015).

Schools, as an organisation and institution, influence spatial segregation (Fiel, 2015) since they are prime sites for competition between status groups with their limited enrolment opportunities (Raftery and Hout, 1993). It is within this built environment that common statuses and identities are produced and reproduced, and further variations between status groups - based on what schools they attend - are created (Fiel, 2015). Segregation is also shown to increase with the decentralisation or privatisation of the schooling system (Fiel, 2015). The commercialising of schools provides opportunities for those with economic prowess to monopolise or concentrate resources, such as advanced computers, renowned professors or new facilities, which would reflect the prestige that the status group holds.

***Maximally Maintained Inequality (MMI)***. With an understanding of how schools can be spaces for contention between status groups, the MMI theory attempts to ease the tension by increasing student enrolment through the physical and geographical expansion of the schooling system (Hout, 2006). The MMI reasons that by building more schools in more places, it would not only satisfy the inherent academic ambitions of high status groups, but create a schooling system that is able to accommodate all classes from various localities. When enrollment opportunities are geographically limited, the upper class, who would be able to use their resources to overcome spatial distance, would become dominant. The MMI therefore creates an education system that is less selective and boosts the overall academic attainment (Raftery and Hout, 1993).

MMI also complements the life course perspective hypothesis (LCP), which states that as students mature and transition into the later stages of education, SES would have a lesser impact on academic outcomes due to their growing financial and social independence (Lucas, 2001). MMI thus aims to maximise access to education at the earlier stages in order to effectively increase levels of equity. The MMI has also been praised for “*its ability to account for patterns without resorting to hypotheses about a conspiracy among elites or efficacious class action*” (Hout, 2006, p. 249). However, one can still argue that the lack of intentional class action does not mean the absence of class effects altogether.

***Effectively Maintained Inequality (EMI)***. The EMI theory, as a critique on the MMI theory, asserts that despite the spatial inclusion of all classes through the widespread construction of schools, qualitative disparities in academic attainment still persist (Byun, 2017). Academic



attainment can often be assumed as a straight line to academic success – primary school, secondary school, tertiary education and college. However, the dynamic expansion and maturity of the education system has brought about much room for variation, especially with the emergence of prestigious schools, which include private, independent or autonomous institutions. These higher-status schools have been argued to provide better outcomes for their students due to the availability of gifted academic tracks, college entry programs and lessons in political efficacy (Ho, 2012). Having more schools in more neighbourhoods therefore does not necessarily translate to widespread educational equity as the quality and type of school has notable effects on academic outcomes (Raftery, and Hout, 1993). It is thus insufficient to know whether one is receiving education, but *where* one receives education.

This is important when considering the geographic and spatial burdens of the lower class, such as their relative lack of resources, transportation options and neighbourhood amenities (Raftery, and Hout, 1993). Ultimately, the MMI, in its current form, does not account for spatial inequalities. Selective measures, often influenced by socioeconomic and geographical factors, are still prevalent and this has led to a growing number of advantaged students within prestigious schools and a concentration of disadvantaged students within lower-status schools, which further compounds issues of educational inequity (Sattin-Bajaj, and Roda, 2018). In this light, broad strokes in education policy, such as the MMI, neglect the realities of academic opportunities. The MMI is revealed to be more of an elitist approach to educational inequity as it pacifies the aspirations of the upper class whilst neglecting the geographical inequalities of academic provisions that fuel the class divide.

***Opportunity Hoarding.*** The conflict theory introduces the concept of a spatial competition between status groups, while the EMI theory, as an important critique to the MMI, highlights the unfair nature of this spatial competition in matured and widespread schooling systems. However, how exactly are elite status groups winning in the struggle for academic prestige and opportunity? The opportunity hoarding theory elaborates on how upper class families create socio-spatial segregation within and between schools. In agreement with the conflict theory and EMI, upper class families are competitively securing positions in high status schools, which offer newer infrastructure and house children of similar social origins, to create a social environment reflective of their SES (Hanselman and Fiel, 2017).

In order to achieve such an environment, research in opportunity hoarding has identified public policy tools - residential sorting, academic tracks and school choice policies - as possible ways to preserve SES (Table 1). Academics have also found instances when policies that attempt to improve the academic standing of the lower classes were blocked by upper class individuals so as to preserve the social environment (Sattin-Bajaj and Roda, 2018). When direct measures were not viable, indirect measures, such as gentrification, employing private tutors or purchasing expensive test preparation materials, could also be taken (Sattin-Bajaj and Roda, 2018). As more high-SES individuals within a particular geography engage in such activities, area-level opportunity hoarding may be observed (Hanselman and Fiel, 2017).

<b>Opportunity Hoarding Methods by High-SES Status Groups</b>		
<i>No.</i>	<i>Scale</i>	<i>Method</i>
1	Household	Employing private tutors
2		Securing school guide books and directories
3		Purchasing expensive test preparation materials
4	Neighborhood	Utilising social networks and personal relationships
5		Moving to high-SES neighborhoods
6		Gentrification
7	State	Influencing housing policies
8		Influencing education policies

*Table 1.* High-SES status groups have various socio-spatial opportunity hoarding methods to secure advantage in education (Hanselman and Fiel, 2017; Sattin-Bajaj and Roda, 2018).

**Urban Education.** Educational inequity is therefore much more than an issue with the schooling system, and more of a manifestation of class inequalities and their subsequent spatial consequences. However, ‘spatial consequences’ on its own would be a rather broad endeavor. If one was to look for a rich concentration of spatial variations in transportation, housing and amenities - as suggested by the above theories to be contributing factors to educational inequity - the city becomes a prominent site. In fact, prior studies into urban education have highlighted how the structure of modern city neighbourhoods influence educational inequity (Raffo, 2011).

In terms of quantitative studies, research into urban education has been made especially possible with the 1990s quantitative turn in geography and rise of geographic information systems (GIS) that saw geographers increasingly competent in managing large amounts of spatial data to divide cities into their various material components. This opened doors for much geographical analysis on the architectural characteristics of education within cities. Examples included mapping housing types surrounding schools, measuring accessibility for parents (Yoon et al., 2018) and tracking student movements (Thiem, 2009). In terms of educational equity, GIS is therefore able to shed light on possible attendance boundaries or spatial orderings that reinforce socioeconomic or racial segregation within a city (Yoon *et al.*, 2018).

Additionally, in line with urban interpretations by philosopher Lefebvre (1991), schools are understood to operate in social spaces and these educational institutions have an influence on their surroundings. Universities are seen as sources for human capital and knowledge production, and a cluster of respectable schools have the potential to create an educational hub or ‘learning region’ (Thiem, 2009). Similarly, just as schools have an impact on urban spaces, the urban neighbourhood has potential to influence the educational institution. This is done through multiple means, such as uneven educational provisions by the state, changing policies in urban immigration and gentrification (Thiem, 2009). It is through this interplay between the school and urban spaces that one is able to better understand how urban education is not only a practico-material geography but also a social geography, which is a space that is constantly being reproduced and remade through human interactions and discourse (Lefebvre, 1991).

The urban experience is thus full of such absolute and social conceptions of education, as shown the various socio-spatial theories. However, in order to test the aforementioned theories, especially in an urban context, a country-specific study is required to avoid an over-simplistic global assessment.

### 3. CASE STUDY: THE SINGAPOREAN SECONDARY SCHOOL SYSTEM

Singapore, a post-industrial city-state, faced a large critique at the World EduLead 2019 conference, whereby its education system was found to have produced high levels of academic attainment at the expense of educational equity (Figure 1).

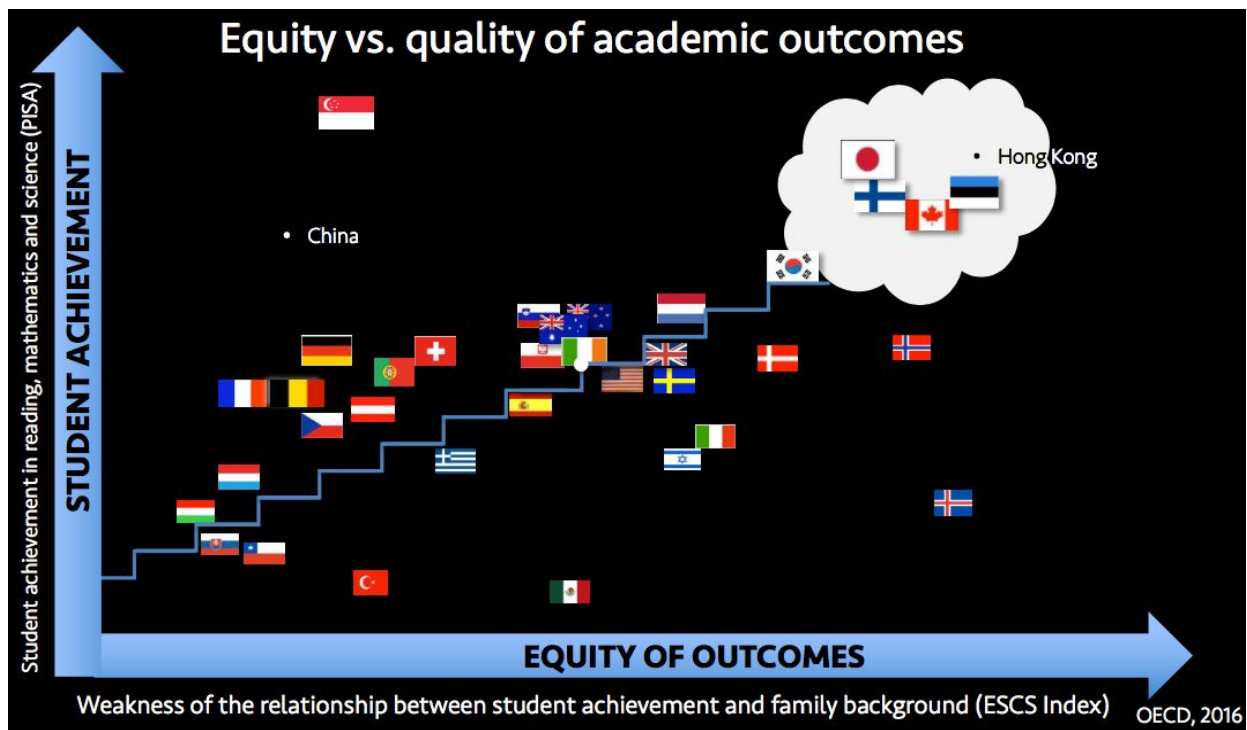


Figure 1. In terms of educational equity, Singapore is in its own league (Sahlberg, 2019).

The results were extracted from the Organisation for Economic Cooperation and Development (OECD), which is a leading organisation in education policymaking that oversees the globally renowned Programme for International Student Assessment (PISA)<sup>3</sup>. OECD reports had also revealed how Singaporean students with tertiary-educated parents were 18 times more likely to complete tertiary education, as compared to those with parents of lower academic standings (OECD, 2018). Additionally, large variations were observed between disadvantaged students in advantaged and disadvantaged schools, which may prove that the socioeconomic profiles of schools have a significant role in academic outcomes (Annex A). This agrees with reports indicating that elite institutions in Singapore were accommodating a greater concentration of higher-SES students (Teng, 2015) whilst “*nearly half of low-income students in Singapore are concentrated in the same schools*” (Teng, 2018, p. 1).

Education in Singapore is contextualised in an urban geography. However, research on its education system has lacked such geographical or urban perspectives, and have mostly been analyzed through the lens of sociologists and economists (Ho, 2012; Ng, 2014; Mukhopadhaya, 2000). Thus, a geographical perspective could prove insightful and stimulate new perspectives to improve education policies revolving around the Singaporean education system.

To begin a study on educational equity in Singapore, a certain stage of education has to be identified for a more in-depth analysis. According to the life course perspective, lower levels of

---

<sup>3</sup> Launched in 2000, PISA is a triennial international standardised assessment, taken by 79 countries and economies, that measures abilities in reading, mathematics and science among 15-year-olds (OECD, 2018).

education - primary or secondary education - should be studied as when students mature, their academic outcomes become less affected by their socioeconomic origins (Lucas, 2001).

**Primary school education.** In Singapore, students typically spend six years in primary education – from the ages of 7 to 12. According to the Ministry of Education, Singapore (MOE) School Information Service (SIS), there are a total of 186 primary schools in Singapore (MOE, 2020). These schools can be categorised into two types (MOE, 2020):

1. Government – publicly-funded; has standardised fees and follows a national curriculum
2. Government-aided – largely funded by the government; has standardised fees and deviates slightly from the national curriculum

Having completed the Primary School Leaving Examination (PSLE)<sup>4</sup>, Singaporean students prepare to enter secondary education. Through a state-controlled internet admissions system, primary school graduates rank up to six secondary schools and admissions would be based on their academic results and availability of vacancies. If a student does not get into any of their six choices, he or she would be posted to a secondary school near their home.

**Secondary school education.** Singaporean students generally spend the next four to five years in secondary school – from the ages of 13 to 17. Based on the MOE SIS, there are a total of 152 secondary schools, including several mixed-level schools<sup>5</sup> (MOE, 2020). The schools are categorised into five types (MOE, 2018):

---

<sup>4</sup> In Singapore, the PSLE is a national examination taken at the end of primary school education (SEAB, 2020).

<sup>5</sup> Mixed-level schools combine the secondary and junior college curriculum into a six-year programme.

1. Government – publicly-funded; has standardised fees and follows a national curriculum
2. Government-aided – largely funded by the government; has standardised fees and deviates slightly from the national curriculum
3. Independent – sets their own fees and academic curriculum
4. Independent specialised – sets their own fees, and provides an educational niche, such as mathematics and science, arts or sports
5. Specialised – vocational schools for practical and hands-on learning

Having completed a nation-wide examination<sup>6</sup>, the majority of secondary school graduates would choose from three post-secondary tracks. These are (1) junior colleges, for pre-university education, (2) polytechnics, to receive diploma qualifications, and the Institute for Technical Education (ITE), for vocational and technical education (Figure 2).

---

<sup>6</sup> Secondary school students have to complete either the Singapore-Cambridge General Certificate of Education Ordinary Level (GCE O-Level) examination or Normal Level (GCE N-Level) examination during their final year in order to graduate.



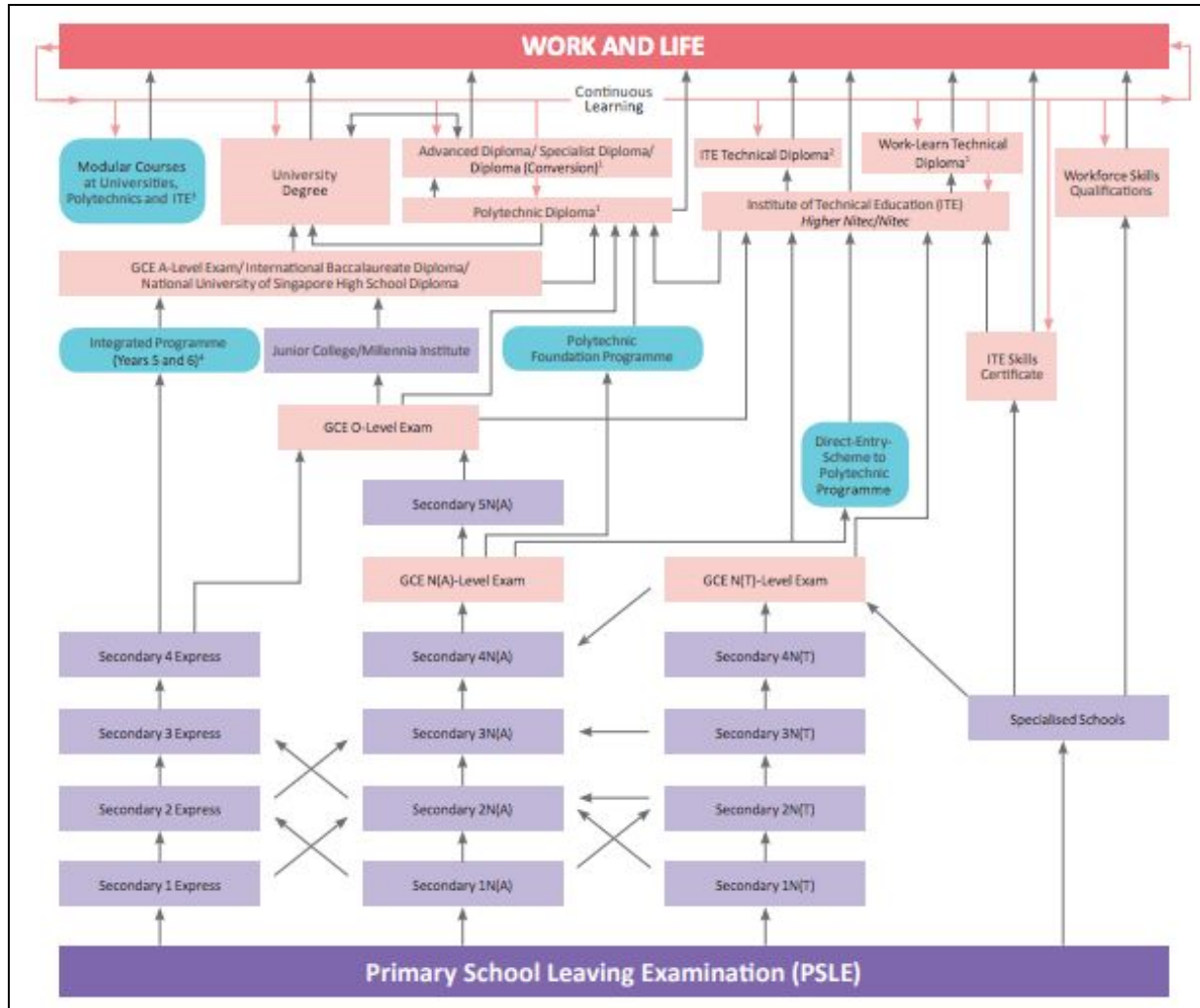
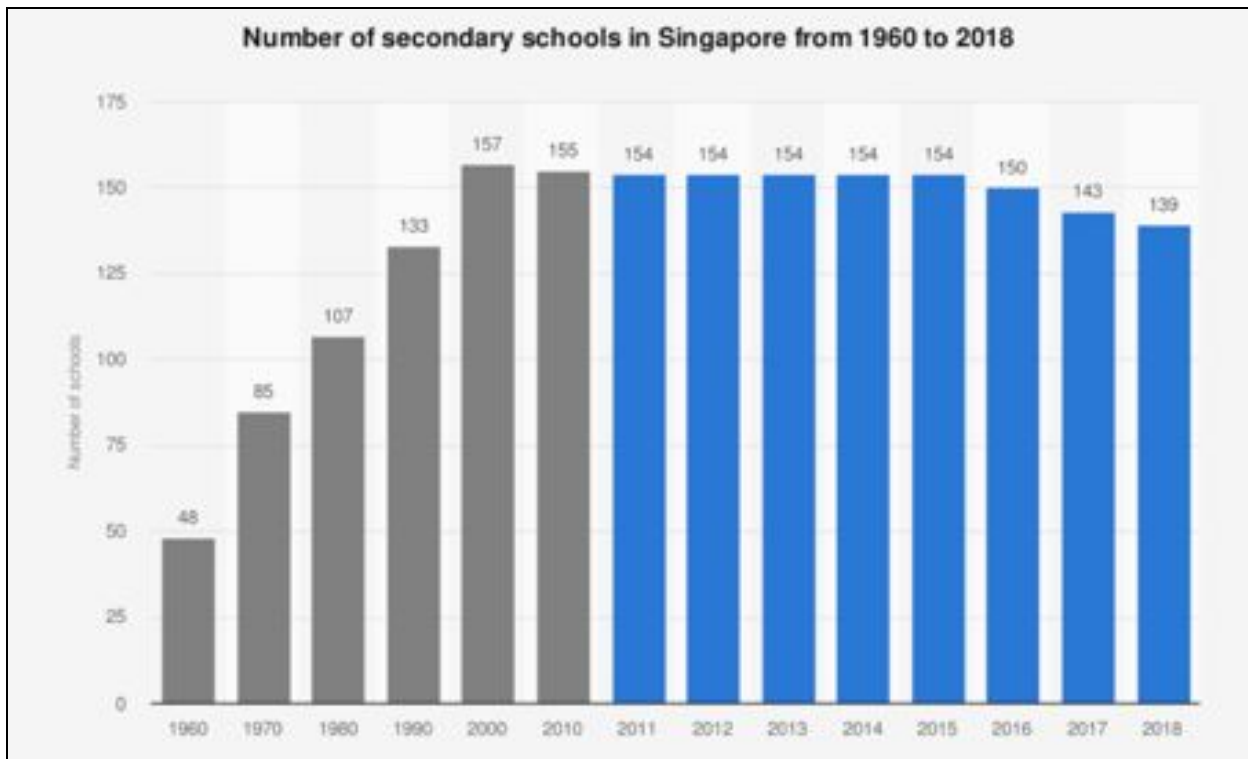


Figure 2. Majority of secondary school students have three post-secondary routes (MOE, 2018).

Based on a preliminary assessment of the primary and secondary school system, the secondary school system seems to be more stratified and shows more room for studies into educational equity. Furthermore, unlike the primary stage, the secondary stage has a direct link to pre-university education through the final-year nation-wide examination. Thus, the secondary school system is more fitting for this study.

**Secondary school neighbourhoods.** Since its independence in 1965, the Singaporean education system has rapidly increased its number of secondary schools, with 48 in the 1960s to 152 in 2020 (Figure 3). This expansion is paralleled with its secondary education becoming almost universal - at about 99% - and the city-state maturing into a world-class education hub (UNESCO, 2011).



*Figure 3.* Within five decades, secondary schools in Singapore have more than tripled in number (Statista, 2019).

These 152 secondary schools are spread across the city-state, which has been delineated into *planning areas*, as determined by the Urban Redevelopment Authority (URA) of Singapore<sup>7</sup> (Chew, 2008). The URA has divided Singapore into five regions – Central, East, North, North-East and West – which are then subdivided into a total of 55 planning areas (Figure 4).



*Figure 4.* The planning area boundaries as set by the URA (Government of Singapore, 2014).

The 152 schools are currently located in 28 planning areas, with a majority of schools in Bedok (11), Woodlands (11) and Jurong West (10). The planning areas with the least schools are Outram (1), Museum (1), Sembawang (2) and Kallang (2). When calculating for population density, spatial disparities can be seen as the most dense planning areas - Choa Chu Kang (6),

---

<sup>7</sup> The URA is a statutory board that oversees key nation-state functions, which involve land use, urban design, building conservation, car parks management and land sales (URA, 2020)

Seng Kang (6) and Woodlands (11) - have comparatively little secondary schools when compared to the least dense planning areas - Museum (1), Bukit Timah (5) and Jurong East (3) (Annex B). It should be noted that Choa Chu Kang is over six times denser than Museum and Bukit Timah combined.

Furthermore, analysis into population density in terms of Singaporeans aged 10-19 showed that spatial disparities still persisted. The most dense planning areas by those aged 10 to 19 were Choa Chu Kang (6), Woodlands (11) and Jurong West (10), while the least dense were Museum (1), Queenstown (5) and Jurong East (3) (Annex C). In terms of student population density, Choa Chu Kang is over four times denser than Museum, Queenstown and Jurong East combined.

***Independent secondary schools.*** Independent schools, which account for eight of the current 152 schools, are seen as prestigious as they offer their own academic and non-academic curriculum, preferential admissions into recognised pre-university institutions and gifted programmes. Most of the Singapore secondary schools offer three academic tracks – express, normal academic and normal technical – however, all of the independent schools do not offer the lower two normal tracks. Independent schools can charge up to \$550 per month for school fees, which is much more than the \$5 per month charged by government schools (Learners’ Lodge, 2020).

Furthermore, all of the independent secondary schools are located in the central region of Singapore, with the Bukit Timah planning area having the most number of independent schools - three - followed by Novena - two (Annex D). Bukit Timah is the premier residential district of

Singapore, with a dense cluster of private properties, including luxury condominiums and landed property and few public housing (Loi, 2017). Housing arrangements in Bukit Timah contrasts with the general Singapore housing market as an estimated 80% of residents stay in public housing, also known as flats (HDB, 2020).

To better understand the prestige of independent schools, one can look to the educational backgrounds of the current 19 Singaporean ministers, whereby more than half of all the ministers graduated from now independent secondary schools (Annex E). Additionally, one-fifth of the Singaporean ministers graduated from Raffles Institution, which is an independent school. Raffles Institution can thus be seen as an elite institution in Singapore. It is also worth noting that none of the secondary schools that the current ministers graduated from are now fully-funded government schools, which are the majority of secondary schools in Singapore.

***Secondary school affiliations.*** School affiliations are a means for Singaporean schools to pool resources and provisions. Often geographically concentrated, these primary to secondary school or secondary school to junior college affiliations allow schools from both education levels to gain academic and non-academic advantages. Seven of the eight independent secondary schools have either affiliations with junior colleges or direct entry into junior college education through the Integrated Programme (IP)<sup>8</sup>.

---

<sup>8</sup> The IP is a six-year secondary and junior college programme for those identified as academically gifted (MOE, 2018). Students in this programme would not have to take the nation-wide 'O' Level examinations.

For example, in the case of Nanyang Girls' High School, this secondary school is affiliated with Hwa Chong Institution. Hwa Chong Institution is known as one of the top two junior colleges in Singapore and an affiliation with Hwa Chong allows Nanyang Girls' direct admission into Hwa Chong for junior college education without having to take the nation-wide final-year 'O' Levels examination (Hwa Chong Institution, 2020). Both Nanyang Girls' and Hwa Chong are located in the Bukit Timah planning area.

Additionally, none of the government secondary schools have secondary to junior college school affiliations, whereby only government-aided and independent secondary schools have affiliations to higher education.

#### **4. KEY FINDINGS: SPATIAL UNEVENNESS IN EDUCATION**

*Spatial unevenness by number of schools.* Though the Singaporean secondary school system has expanded exponentially in the last few decades, its physical expansion did not translate into a proportional number of schools per planning area. This takes into account the general population density per planning area, but more importantly, the population density for those aged 10 to 19.

The MMI suggests that a physical expansion of the schooling system would increase levels of educational equity. This simplistic assertion does not take into account the current scenario of schools being disproportionately built across planning areas. Repercussions would include overcoming spatial boundaries, such as travel costs by public or private transport, and

neighbourhood effects, such as studying in an upper-class neighbourhood. This agrees with educational equity literature, whereby disadvantaged students from lower-SES backgrounds would have lesser resources to overcome spatial and neighborhood effects.

Two planning areas stand out in this context, Queenstown and Bukit Timah. Being the second and fourth least dense planning areas respectively, both Queenstown and Bukit Timah have five secondary schools. This is puzzling when considering how Choa Chu Kang, which is the most dense planning area, has six. Furthermore, the premier residential Bukit Timah district houses three prestigious independent schools, while Choa Chu Kang has none.

*Spatial unevenness by type of school.* The EMI critique, with its emphasis on qualitative variations between schools, is most useful for this particular key finding. Independent schools are the prime secondary schools in Singapore, based on their special academic programmes and reputable standing amongst higher institutions. It is thus puzzling when the three planning areas with the most number of secondary schools - Bedok (11), Jurong West (10) and Woodlands (11) - have no independent schools, whilst Bukit Timah (5) has three of the eight independent schools. Additionally, a more broader analysis shows independent schools to be geographically concentrated as all of the independent schools are located in the central region of Singapore.

According to Lefebvre's (1991) analysis on the concept of space, urban society is a social reality. This is accurately shown in the Singaporean city-state, whereby its central region is known for its central business district, tourist attractions and predominantly privatised housing market. The

price of being in the urban core is also reflected in how one needs to pay up to \$550 per month for independent schools - all of which are found in the central region - as compared to \$5 per month for government schools. The spatial clustering of independent schools in central Singapore thus reflects the social reality of an upper class urban core. The central region, as an area for those of high-SES standings, produces and influences the nature of the secondary schools within its area, whilst at the same time, prestigious schools within the central region reproduce the high-SES social reality of the urban core.

Thus, based on the EMI, the variations in the types of secondary schools, along with the presence of independent schools, creates a large gap in academic experiences and opportunities between schools. A student entering an independent school would undoubtedly receive a better quality of education as compared to one entering a government school. Access to these prestigious secondary schools may also be challenging for lower SES families who are less likely to reside within central Singapore or would rather pay the government school rates. Thus, though a respectable feat, more should be done to create an equitable education system than just having more schools to accommodate the classes.

***Spatial unevenness by school opportunities.*** Literature on opportunity hoarding suggests that the upper-class is using individual to state level initiatives to increase academic opportunities, whilst excluding other status groups. Recent reports have indicated how elite institutions are accommodating a larger concentration of higher-SES students, and this comes with no surprise when considering that those from government-aided and independent secondary schools have a



greater advantage in entering higher education through school affiliations, which are not provided to students from government schools. The spatial pattern of school affiliations, whereby most of the school affiliations are geographically in close proximity, also shows that where one stays matters. School affiliations are geographically concentrated, and one has to overcome spatial hurdles if their planning area does not have a school that offers school affiliations.

Education policy also becomes blurry when considering how primary school graduates are assigned to secondary schools. In the case of a pupil not getting any of their six choices - based on poor academic performance or limited school vacancies - they are assigned to a secondary school near their home. This does not explain whether a student in Bukit Timah, having been rejected by six schools, would be assigned to one of the prestigious secondary schools within their planning area. This education policy, which is not defined, further creates spatial unevenness in academic opportunities as a student from another locality would be more likely to be assigned to a less prestigious institution.

Furthermore, where one studies is important for academic and professional opportunities as can be seen through the example of the Singaporean ministers. Status groups formed in elite institutions do not simply dissolve after graduation but the social networks persist within the workforce. Thus, the creation of status cultures according to which school one attends can prove advantageous, especially when considering how where one studies can be a key determinant or advantageously linked to elite higher education institutions and occupations (Collins, 1971).

*A model for spatial unevenness.* In light of the theories tested above, as well as the Singaporean education system, a model on the geographies of education systems can be created (Table 2).

<b>GEOGRAPHIES OF EDUCATION SYSTEMS</b>				
	<b>Stages of Education Systems</b>			
	<b>Early</b> <i>Schools limited to a few geographies</i>	<b>Developing</b> <i>Schools in more geographies</i>	<b>Maturing</b> <i>Schools are widespread</i>	<b>Advanced</b> <i>Schools attain respective status and reputations</i>
<b>Higher-SES Status Group</b>	Saturate available school vacancies	More school choices across geographies	Begin to cluster among certain geographies	Concentrated in high-status institutions
<b>Lower-SES Status Group</b>	Unable to compete for school vacancies	Limited to schools in immediate geography	Begin to face barriers in entering higher status schools	Concentrated in low-status institutions

*Table 2.* Geography and education are closely linked in terms of academic opportunities for various status groups across the different stages of an education system.

The table above provides a foundational socio-spatial means of representing educational equity between the different stages of education systems - early, developing, maturing and advanced. Admittedly, this model should be tested on different countries and there could very well be alterations according to country-specific political and social elements.

What the model does show is a need for wider policy measures that go beyond education provisions and into welfare and social interventions. Education policies that neglect to bridge the

class divide are only temporary remedies as the upper class would find other means to achieve advantage. Therefore, efforts should be concentrated on alleviating poverty and socioeconomic disparity, which is at the heart of the issue. Despite increasing the number of schools and providing universal access to lower-level education, the persistence of spatial unevenness highlights the prevalence of class barriers.

## 5. CONCLUSION

The issue is about class disparities. It might thus prove more effective to empower the poor as, while there exists unbalanced privilege between classes, improvements to the education system would not resolve the spatial unevenness in academic opportunities and outcomes. To further create credibility for this argument, future research into the geographies of education should (1) identify ways to incorporate political and historical perspectives and (2) test the model on the *geographies of education systems* on multiple countries. If a maturing education system is not one that creates greater educational equity, but instead promotes spatial variations, education policymakers should have a deep reflection on the kind of society they would want to groom. Majority of this grooming starts from young and within schools.

### Special Thanks

Thank you to my academic supervisor Professor Elizabeth Ackert for her sociological and geographical insights into the geographies of education, as well as for the various reading materials that enabled me to holistically tackle such a robust study.

## ANNEX A - PISA 2015 RESULTS FOR EDUCATIONAL EQUITY

<b>Equity in Cognitive Achievement</b>					
	<i>Variation in science performance by student's SES</i>	<i>National resilience among disadvantaged students</i>	<i>Core-skills resilience among disadvantaged students</i>	<i>Disadvantaged students in disadvantaged schools</i>	<i>Score-point difference in science associated with attending an advantaged versus a disadvantaged school, among disadvantaged students</i>
OECD Average	12.9%	11.3%	25.2%	48.0%	78
Singapore	16.8%	9.5%	43.2%	46.3%	127
Rank (70 countries / economies)	61/70	58/70	3/70	48/70	63/70

*Singapore ranks poorly in terms of educational equity in cognitive achievement (OECD, 2018).*

<b>Equity in Student Well-Being</b>			
	<i>Difference between socio-economically advantaged and disadvantaged students in...</i>		
	<i>...index of science self-efficacy</i>	<i>...career expectations</i>	<i>...sense of belonging at school</i>
OECD Average	0.60	50.2	7.7
Singapore	0.80	32.5	10.4
Rank (70 countries / economies)	66/70	1/70	60/70

*Singapore ranks poorly in terms of educational equity in student well-being (OECD, 2018).*

**ANNEX B - GENERAL POPULATION DENSITY PER PLANNING AREA**

	Name	Region	Area (km2)	Population	Density (/km2)	Total Schools
1	Choa Chu Kang	West	6.11	187,510	31,000	6
2	Jurong West	West	14.69	266,720	27,000	10
3	Sengkang	North-East	10.59	240,640	19,511	6
4	Woodlands	North	13.59	252,530	18,424	11
5	Punggol	North-East	9.34	161,570	17,000	3
6	Outram	Central	1.37	20,030	16,081.60	1
7	Hougang	North-East	13.93	223,010	16,000	8
8	Bukit Panjang	West	8.99	140,820	16,000	6
9	Toa Payoh	Central	8.17	120,480	15,298.20	7
10	Bedok	East	21.69	281,300	13,000	11
11	Bukit Batok	West	11.13	144,410	13,000	6
12	Tampines	East	20.89	257,110	12,506.20	9
13	Geylang	Central	9.64	111,610	12,129	3
14	Ang Mo Kio	North-East	13.94	165,710	12,000	7
15	Bishan	Central	7.62	88,490	12,000	6
16	Serangoon	North-East	10.1	117,310	11,945.20	4
17	Bukit Merah	Central	14.34	151,870	11,000	4
18	Kallang	Central	9.17	101,420	11,000	2
19	Clementi	West	9.49	93,000	9,800	6
20	Yishun	North	21.24	214,940	9,507.20	8
21	Pasir Ris	East	15.02	146,920	9,313	4
22	Marine Parade	Central	6.12	47,250	7,700	5
23	Sembawang	North	12.34	87,380	6,203.30	2
24	Novena	Central	8.98	48,950	5,344.10	3
25	Queenstown	Central	20.43	97,870	4,800.50	5
26	Jurong East	West	17.83	81,180	4,600	3
27	Bukit Timah	Central	17.53	77,280	4,400	5
28	Museum	Central	0.83	420	480	1

**ANNEX C - STUDENT POPULATION DENSITY PER PLANNING AREA**

	<b>Planning_Area</b>	<b>Region</b>	<b>Area_km2</b>	<b>Pop_Age_10-19</b>	<b>Density_10-19_km2</b>	<b>Total_Sch</b>
1	Choa Chu Kang	West	6.11	26,200	4,288	6
2	Woodlands	North	13.59	38,030	2,798	11
3	Jurong West	West	14.69	34,720	2,364	10
4	Sengkang	North-East	10.59	24,470	2,311	6
5	Bukit Panjang	West	8.99	17,880	1,989	6
6	Hougang	North-East	13.93	26,060	1,871	8
7	Bukit Batok	West	11.13	17,210	1,546	6
8	Tampines	East	20.89	32,000	1,532	9
9	Toa Payoh	Central	8.17	12,210	1,494	7
10	Bedok	East	21.69	31,680	1,461	11
11	Pasir Ris	East	15.02	21,350	1,421	4
12	Serangoon	North-East	10.1	13,940	1,380	4
13	Bishan	Central	7.62	10,230	1,343	6
14	Ang Mo Kio	North-East	13.94	17,610	1,263	7
15	Geylang	Central	9.64	11,740	1,218	3
16	Punggol	North-East	9.34	10,640	1,139	3
17	Outram	Central	1.37	1,460	1,066	1
18	Yishun	North	21.24	22,630	1,065	8
19	Kallang	Central	9.17	9,230	1,007	2
20	Clementi	West	9.49	9,170	966	6
21	Bukit Merah	Central	14.34	13,500	941	4
22	Marine Parade	Central	6.12	5,290	864	5
23	Sembawang	North	12.34	10,190	826	2
24	Novena	Central	8.98	5,050	562	3
25	Bukit Timah	Central	17.53	9,630	549	5
26	Jurong East	West	17.83	9,520	534	3
27	Queenstown	Central	20.43	9,110	446	5
38	Museum	Central	0.83	20	24	1

## ANNEX D - TYPES OF SCHOOLS PER PLANNING AREA

	Name	Total	Government	Government-Aided	Independent	Specialised	Specialised Independent
1	Ang Mo Kio	7	5	2			
2	Bedok	11	8	3			
3	Bishan	6	3	2	1		
4	Bukit Batok	6	6				
5	Bukit Merah	4	3	1			
6	Bukit Panjang	6	4	1		1	
7	Bukit Timah	5	1	1	3		
8	Choa Chu Kang	6	6				
9	Clementi	6	4				2
10	Geylang	3	1	2			
11	Hougang	8	4	4			
12	Jurong East	11	6	4		1	
13	Jurong West	10	10				
14	Kallang	2	2				
15	Marine Parade	5	2	2		1	
16	Museum	1					1
17	Novena	3		1	2		
18	Outram	1	1				
19	Pasir Ris	4	3	1			
20	Punggol	3	3				
21	Queenstown	5	3	1	1		
22	Sembawang	2	2				
23	Sengkang	6	4	2			
24	Serangoon	4	3	1			
25	Tampines	9	7	2			
26	Toa Payoh	7	3	3	1		
27	Woodlands	11	8	1		1	1
28	Yishun	8	7	1			

**ANNEX E - ACADEMIC BACKGROUNDS OF SINGAPOREAN MINISTERS**

No.	Secondary School	Type	Pre-University School	Current Minister
1	Anglo-Chinese School	Independent	Anglo-Chinese Junior College	Tharman Shanmugaratnam
2	Anglo-Chinese School	Independent	National Junior College	Ng Eng Hen
3	Anglo-Chinese School	Independent	National Junior College	Vivian Balakrishnan
4	Bukit Panjang Government High School	Autonomous Government	National Junior College	Masagos Zulkifli Bin Masagos Mohamad
5	Catholic High School	Autonomous Government-Aided	National Junior College	Lee Hsien Loong
6	Catholic High School	Autonomous Government-Aided	National Junior College	Gan Kim Yong
7	Chung Ling High School (Malaysia)	Nil	Chung Ling High School (Malaysia)	Khaw Boon Wan
8	Dunman High School	Autonomous Government	Raffles Junior College	Josephine Teo
9	Hwa Chong Institution (then The Chinese High School)	Independent	Hwa Chong Junior College	Ng Chee Meng
10	Maris Stella High School	Autonomous Government-Aided	Raffles Junior College	Ong Ye Kung
11	Nanyang Girls' High School	Independent	Hwa Chong Junior College	Grace Fu Hai Yien
12	Raffles Institution	Independent	Raffles Junior College	Heng Swee Keat
13	Raffles Institution	Independent	Raffles Junior College	K Shanmugam
14	Raffles Institution	Independent	Raffles Junior College	Chan Chun Sing
15	Raffles Institution	Independent	Raffles Junior College	Desmond Lee
16	St. Andrew's Secondary School	Government-Aided	St. Andrew's Junior College	S Iswaran
17	St. Joseph's Institution	Independent	Saint Joseph's Institution	Teo Chee Hean



## BIBLIOGRAPHY

1. Byun, S. (2017) *Educational Opportunity in Korea* [Online]. Available from: <https://ptb2015.wordpress.com/2017/02/01/when-different-types-of-education-matter/> [Accessed 31 January 2020].
2. Chew, V. (2008) Development guide plans. *Singapore Infopedia* [Online] Available from: [https://eresources.nlb.gov.sg/infopedia/articles/SIP\\_1371\\_2009-01-05.html](https://eresources.nlb.gov.sg/infopedia/articles/SIP_1371_2009-01-05.html) [Accessed 12 January 2020].
3. Collins, R. (1971) Functional and Conflict Theories of Educational Stratification. In: R. Arum, I. Beattie and K. Ford, eds. *The Structure of Schooling*. Second Edition. California: SAGE Publications Inc, 2011, 74-90
4. Fiel, J. (2015) Closing Ranks: Closure, Status Competition, and School Segregation. *American Journal of Sociology*, 121(1), 126–170.
5. Government of Singapore (2014) *Master Plan 2014 Planning Area Boundary (Web)*. [Online]. Available from: <https://data.gov.sg/dataset/master-plan-2014-planning-area-boundary-web> [Accessed 12 January 2020].
6. Hanselman, P. and Fiel, J. (2017) School Opportunity Hoarding? Racial Segregation and Access to High Growth Schools. *Social Forces*, 95(3), 1077–1104.
7. HDB (2020) *Public Housing - A Singapore Icon*. [Online]. Available from: <https://www.hdb.gov.sg/cs/infoweb/about-us/our-role/public-housing--a-singapore-icon> [Accessed 12 January 2020].
8. Ho, L. (2012) Sorting citizens: Differentiated citizenship education in Singapore. *Journal of Curriculum Studies*, 44(3), 403-428.
9. Holme, J. (2002) Buying Homes, Buying Schools: School Choice and the Social Construction of School Quality. *Harvard Educational Review*, 72(2), 177–205.
10. Hout, M. (2006) Maximally Maintained Inequality and Essentially Maintained Inequality: Crossnational Comparisons. *Sociological Theory and Methods*, 21(2), 2237-252.
11. Government of Singapore (2017) Singapore’s Public Data. [Online]. Available from: <https://data.gov.sg/> [Accessed 12 April 2020].
12. Hwa Chong Institution (2020) *Nanyang Girls’ High School*. [Online]. Available from: <http://www.hci.edu.sg/about/affiliation-partners/1> [Accessed 12 January 2020].
13. Learners’ Lodge (2020) *Integrated Programme (IP) School Fees (Per Month)*. [Online]. Available from: <https://www.learnerslodge.com.sg/news/integrated-programme-ip-school-fees/> [Accessed 5 February 2020].
14. Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell.
15. Loi, R (2017) *Many Sides of Bukit Timah*. [Online]. Available from: <https://www.businesstimes.com.sg/lifestyle/nostalgia/many-sides-of-bukit-timah> [Accessed 12 January 2020].
16. Lucas, S. (2001) Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects. *American Journal of Sociology*, 106(6), 1642–1690.
17. MOE, Singapore (2018) *Integrated Programme (IP)*. [Online]. Available from: <https://www.moe.gov.sg/microsites/whats-next/for-psle-students/where-do-i-want-to-go/integrated-programme-ip/index.html> [Accessed 12 January 2020].
18. MOE, Singapore (2018) *School type*. [Online]. Available from: <https://beta.moe.gov.sg/secondary/schools/types/> [Accessed 12 January 2020].
19. MOE, Singapore (2020) *School Information Service*. [Online]. Available from: <https://sis.moe.gov.sg/default.aspx?search=directory> [Accessed 12 January 2020].
20. Mukhopadhyaya, P. (2000) Education Policies as Means to Tackle Income Disparity: The Singapore Case. *International Journal of Sociology and Social Policy*, 20(11), 59-73.
21. Ng, I. (2014) Education and Intergenerational Mobility in Singapore. *Educational Review*, 66(3), 362-376.
22. OECD (2012) *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*. OECD Publishing.
23. OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, OECD Publishing, Paris.
24. OECD (2018) *PISA*. [Online]. Available from: <https://www.oecd.org/pisa/> [Accessed 17 March 2020].
25. Owens, A. (2010) Neighborhoods and Schools as Competing and Reinforcing Contexts for Educational Attainment. *Sociology of Education*, 83(4), 287–311.
26. Raffo, C. (2011) Educational Equity in Poor Urban Contexts – Exploring Issues of Place/Space and Young people’s Identity and Agency. *British Journal of Educational Studies*, 59(1), 1–19.

27. Raftery, A. and Hout, M. (1993) Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education, 1921-75. *Sociology of Education*, 66(1), 41–62.
28. Sahlberg, P. (2019). *Building Good Schools for Each and Every Child*. World EduLead 2019, 18 April, Singapore.
29. Sattin-Bajaj, C. and Roda, A (2018) Opportunity Hoarding in School Choice Contexts: The Role of Policy Design in Promoting Middle-Class Parents' Exclusionary Behaviors. *Educational Policy*, 1–44.
30. SEAB (2020) *PSLE*. [Online]. Available from: <https://www.seab.gov.sg/home/examinations/psle> [Accessed 20 January 2020].
31. Singapore Statutes Online (2020) *Compulsory Education Act* [Online]. Available from: <https://sso.agc.gov.sg/Act/CEA2000> [Accessed 31 January 2020].
32. Teng A. (2015) *RI population less diverse now, say many alumni*. [Online]. Available from: <https://www.straitstimes.com/singapore/education/ri-population-less-diverse-now-say-many-alumni> [Accessed 27 January 2020].
33. Teng A. (2018) *Nearly half of low-income students in Singapore attend the same schools*. [Online]. Available from: <https://www.straitstimes.com/singapore/education/nearly-half-of-low-income-students-in-singapore-attend-the-same-schools> [Accessed 27 January 2020].
34. Thiem, C. (2009) Thinking Through Education: The Geographies of Contemporary Educational Restructuring. *Progress in Human Geography*, 33(2), 154–173.
35. UNESCO (2011), *World Data on Education: Singapore*, UNESCO International Bureau of Education.
36. URA (2020) *What We Do*. [Online]. Available from: <https://www.ura.gov.sg/Corporate/About-Us/What-We-Do> [Accessed 12 January 2020].
37. Waters, J. L. (2018) Geographies of Education. [Online]. Available from: <https://www.oxfordbibliographies.com/view/document/obo-9780199874002/obo-9780199874002-0182.xml> [Accessed 12 April 2020].
38. Yoon, E., Gulson, K. and Lubienski, C. (2018) A Brief History of the Geography of Education Policy: Ongoing Conversations and Generative Tensions. *AERA Open*, 44(3), 1-9.

## BIBLIOGRAPHY

1. Byun, S. (2017) *Educational Opportunity in Korea* [Online]. Available from: <https://ptb2015.wordpress.com/2017/02/01/when-different-types-of-education-matter/> [Accessed 31 January 2020].
2. Chew, V. (2008) Development guide plans. *Singapore Infopedia* [Online] Available from: [https://eresources.nlb.gov.sg/infopedia/articles/SIP\\_1371\\_2009-01-05.html](https://eresources.nlb.gov.sg/infopedia/articles/SIP_1371_2009-01-05.html) [Accessed 12 January 2020].
3. Collins, R. (1971) Functional and Conflict Theories of Educational Stratification. In: R. Arum, I. Beattie and K. Ford, eds. *The Structure of Schooling*. Second Edition. California: SAGE Publications Inc, 2011, 74-90
4. Fiel, J. (2015) Closing Ranks: Closure, Status Competition, and School Segregation. *American Journal of Sociology*, 121(1), 126–170.
5. Government of Singapore (2014) *Master Plan 2014 Planning Area Boundary (Web)*. [Online]. Available from: <https://data.gov.sg/dataset/master-plan-2014-planning-area-boundary-web> [Accessed 12 January 2020].
6. Hanselman, P. and Fiel, J. (2017) School Opportunity Hoarding? Racial Segregation and Access to High Growth Schools. *Social Forces*, 95(3), 1077–1104.
7. HDB (2020) *Public Housing - A Singapore Icon*. [Online]. Available from: <https://www.hdb.gov.sg/cs/infoweb/about-us/our-role/public-housing--a-singapore-icon> [Accessed 12 January 2020].
8. Ho, L. (2012) Sorting citizens: Differentiated citizenship education in Singapore. *Journal of Curriculum Studies*, 44(3), 403-428.
9. Holme, J. (2002) Buying Homes, Buying Schools: School Choice and the Social Construction of School Quality. *Harvard Educational Review*, 72(2), 177–205.
10. Hout, M. (2006) Maximally Maintained Inequality and Essentially Maintained Inequality: Crossnational Comparisons. *Sociological Theory and Methods*, 21(2), 2237-252.
11. Government of Singapore (2017) Singapore's Public Data. [Online]. Available from: <https://data.gov.sg/> [Accessed 12 April 2020].
12. Hwa Chong Institution (2020) *Nanyang Girls' High School*. [Online]. Available from: <http://www.hci.edu.sg/about/affiliation-partners/1> [Accessed 12 January 2020].

13. Learners' Lodge (2020) *Integrated Programme (IP) School Fees (Per Month)*. [Online]. Available from: <https://www.learnerslodge.com.sg/news/integrated-programme-ip-school-fees/> [Accessed 5 February 2020].
14. Lefebvre, H. (1991). *The production of space*. Oxford: Blackwell.
15. Loi, R (2017) *Many Sides of Bukit Timah*. [Online]. Available from: <https://www.businesstimes.com.sg/lifestyle/nostalgia/many-sides-of-bukit-timah> [Accessed 12 January 2020].
16. Lucas, S. (2001) Effectively Maintained Inequality: Education Transitions, Track Mobility, and Social Background Effects. *American Journal of Sociology*, 106(6), 1642–1690.
17. MOE, Singapore (2018) *Integrated Programme (IP)*. [Online]. Available from: <https://www.moe.gov.sg/microsites/whats-next/for-psle-students/where-do-i-want-to-go/integrated-programme-ip/index.html> [Accessed 12 January 2020].
18. MOE, Singapore (2018) *School type*. [Online]. Available from: <https://beta.moe.gov.sg/secondary/schools/types/> [Accessed 12 January 2020].
19. MOE, Singapore (2020) *School Information Service*. [Online]. Available from: <https://sis.moe.gov.sg/default.aspx?search=directory> [Accessed 12 January 2020].
20. Mukhopadhyaya, P. (2000) Education Policies as Means to Tackle Income Disparity: The Singapore Case. *International Journal of Sociology and Social Policy*, 20(11), 59-73.
21. Ng, I. (2014) Education and Intergenerational Mobility in Singapore. *Educational Review*, 66(3), 362-376.
22. OECD (2012) *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*. OECD Publishing.
23. OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, OECD Publishing, Paris.
24. OECD (2018) *PISA*. [Online]. Available from: <https://www.oecd.org/pisa/> [Accessed 17 March 2020].
25. Owens, A. (2010) Neighborhoods and Schools as Competing and Reinforcing Contexts for Educational Attainment. *Sociology of Education*, 83(4), 287–311.
26. Raffo, C. (2011) Educational Equity in Poor Urban Contexts – Exploring Issues of Place/Space and Young people's Identity and Agency. *British Journal of Educational Studies*, 59(1), 1–19.

27. Raftery, A. and Hout, M. (1993) Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education, 1921-75. *Sociology of Education*, 66(1), 41–62.
28. Sahlberg, P. (2019). *Building Good Schools for Each and Every Child*. World EduLead 2019, 18 April, Singapore.
29. Sattin-Bajaj, C. and Roda, A (2018) Opportunity Hoarding in School Choice Contexts: The Role of Policy Design in Promoting Middle-Class Parents’ Exclusionary Behaviors. *Educational Policy*, 1–44.
30. SEAB (2020) *PSLE*. [Online]. Available from: <https://www.seab.gov.sg/home/examinations/psle> [Accessed 20 January 2020].
31. Singapore Statutes Online (2020) *Compulsory Education Act* [Online]. Available from: <https://sso.agc.gov.sg/Act/CEA2000> [Accessed 31 January 2020].
32. Teng A. (2015) *RI population less diverse now, say many alumni*. [Online]. Available from: <https://www.straitstimes.com/singapore/education/ri-population-less-diverse-now-say-many-alumni> [Accessed 27 January 2020].
33. Teng A. (2018) *Nearly half of low-income students in Singapore attend the same schools*. [Online]. Available from: <https://www.straitstimes.com/singapore/education/nearly-half-of-low-income-students-in-singapore-attend-the-same-schools> [Accessed 27 January 2020].
34. Thiem, C. (2009) Thinking Through Education: The Geographies of Contemporary Educational Restructuring. *Progress in Human Geography*, 33(2), 154–173.
35. UNESCO (2011), *World Data on Education: Singapore*, UNESCO International Bureau of Education.
36. URA (2020) *What We Do*. [Online]. Available from: <https://www.ura.gov.sg/Corporate/About-Us/What-We-Do> [Accessed 12 January 2020].
37. Waters, J. L. (2018) Geographies of Education. [Online]. Available from: <https://www.oxfordbibliographies.com/view/document/obo-9780199874002/obo-9780199874002-0182.xml> [Accessed 12 April 2020].
38. Yoon, E., Gulson, K. and Lubienski, C. (2018) A Brief History of the Geography of Education Policy: Ongoing Conversations and Generative Tensions. *AERA Open*, 44(3), 1-9.