Geography Curriculum Making in Shanghai: Teacher Agency in Times of Change

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Declaration

I hereby declare that, except where explicit attribution is made, the work presented in this thesis is entirely my own.

Xin Miao

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Abstract

This study took place after two profound changes to educational policy in Shanghai. First, in 2012, the teacher qualification pathway opened the profession to prospective teachers from diverse academic backgrounds. Second, in 2014, the status of school geography changed due to the University Entry Qualifications (known as Gaokao in Chinese) reform, which caused a dramatic rise of students taking geography as one of their Gaokao subjects and a consequent increase in demand for geography teachers. This study explored to what extent these diverse lived experiences in times of change affect geography teachers' sense of agency in their teaching practice, focusing on curriculum making.

The study utilised and extended existing frameworks of geography curriculum making (Lambert and Morgan, 2010; Lambert, Solem and Tani, 2015) and teacher agency (Emirbayer and Mische, 1998; Priestley, Biesta and Robinson, 2015) to analyse and explain Chinese teachers' experiences during this period of change. A different curriculum context ignited new sparks for agency. A qualitative case study approach was adopted to investigate nine teachers from nine Shanghai schools. Five entered teaching before the 2014 Gaokao Reform, known as the pre-Reform cohort. Four entered after 2014, known as the post-Reform cohort. Research activities involved participant-produced reflective diaries, teaching materials and semi-structured interviews. The interview structure is developed from key elements – teachers, students, school geography, academic geography and education – in the geography curriculum making framework and three temporal dimensions (past, present and future) in the teacher agency framework.

Key findings explicitly link curriculum making and teacher agency. First, the pre-Reform cohort deeply understood their interactions with students and the subject while there was evidence of a more instrumental view in the post-Reform cohort. The cohort difference showed how examination-oriented environment limited participant teachers from realising their agency for curriculum making. Secondly, the cohort difference is also visible in teachers' curriculum making diagrams' alignment and divergence to the Lambert model. It showed that policy changes in China influence the Lambert model's usefulness in a different context. The social contexts in changes need to be considered in discussing teacher agency for curriculum making. Thirdly, within both cohorts, undergraduate initial teacher education supports teachers to develop more sophisticated expressions of curriculum making. These

teachers' achievement of agency for curriculum making is related to their epistemic flexibility, vocational motivations and access to diverse professional networks.

The study concludes by suggesting that teacher agency for curriculum making is enhanced by a more supportive ecological environment with more thoughtful policy changes, fewer hierarchies in professional development schemes and reduced performativity pressure.

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Prologue

In 2012, I had my educational practice in a Shanghai school. It had around 10 students who chose geography as their Gaokao (University Entry Qualifications in mainland China) elective subject – out of more than 400 students. Their teacher told me most of them opted for geography because they were not good at other elective subjects. In 2014, my school had 5 students who chose geography as their elective subject – out of more than 400 students in the year. However, a Gaokao Reform in September 2014 brought changes. In the last year of pre-Reform, around 9.41% of examinees opted for geography; while in the first year of post-Reform, over 66.67% examinees opted for geography. In 2022, my contacts in Shanghai informed me that almost every Shanghai student took geography as part of their Gaokao.

I was involved in the changes in the Reform. From September 2013, I started to study a three-year research postgraduate programme: *Curriculum and Didactics (Geography) [in Chinese: 课程与教学论(地理)]* at School of Geographical Sciences in East China Normal University (in Shanghai). *Normal* here means teacher education, borrowing from French *école normale*. In my first year, my senior course mates informed me that Shanghai schools had low demand in recruiting geography teachers. In my second year, following the 2014 Gaokao Reform policy announcement, my senior course mates and my tutors all predicted an increase of students opting for geography Gaokao and a subsequent high demand for staffing geography teachers. In my third year, not only my course mates, many other graduates from the School of Geographical Sciences found teaching jobs in Shanghai schools. After my graduation, I kept in touch with my department and knew many geography graduates entered teaching.

When I was a teacher, I had a dim sense that the 2014 Gaokao Reform seemed to benefit geography graduates' employability rates, but the Reform was not much related to Geography. The reform directed spotlight on the geography Gaokao, rather than Geography as a school subject or academic discipline. I wondered how long the Reform would last. In August 2021, the Shanghai government announced a new document to reverse the 2014 Gaokao reform policy's spotlight on geography Gaokao. At that time, I was in the middle of my data collection. This thesis tells my research journey.

1 Introduction

This study investigates geography curriculum making in Shanghai schools, focusing on teacher agency in times of change. This chapter has three sections. The first section describes the context of the research: a time of educational policy change in Shanghai when the University Entry Qualification system (known as Gaokao) and the system for accrediting teachers were reformed. In the second section, I weave myself into the changing contexts to state why I did this research at this time and place. As a researcher living in these contexts, I knew there would be implications for these reforms. My growing interest and expertise in geography education also enabled me to build a rationale that I am located in the right time and place to describe and comment on the implications, and ask the research questions. The third section gives an overview of what this thesis will do and the structure of each chapter.

1.1 Setting the scene: in times of change, problems may arise

The background to this study consists of two profound changes to educational policy in Shanghai in the 2010s. The first was a change to the teacher qualification pathway in China. In 2010, the Ministry of Education (MoE) announced a National Teacher Certification Examination (NTCE), the required qualification for teachers (MoE, 2010). Where previously, most teachers had graduated from university Initial Teacher Education (ITE) programmes with a combined subject/ education degree, the new reform meant that Chinese citizens with degrees[1] who passed the NTCE test would be certified to teach, irrespective of whether they had studied teacher education formally. Regarding subject knowledge, the NTCE examined only that knowledge that appeared in the national curriculum. For example, the NTCE examined geographical knowledge based on National Geography Curriculum Standards (NTCE, 2015a, 2015b). Examinees were not required to demonstrate the breadth of subject knowledge that might have been expected of previous generations of teachers. Shanghai – where this study takes place – was announced as a pilot city for the reform in 2012 (Shanghai Municipal Education Commission, 2012) before its national rollout. The possible impact of the teacher qualification reform on this study is that people from diverse academic backgrounds could enter teaching by sitting the NTCE geography test.

[1] According to the Teachers' Law of People's Republic of China (Standing Committee of the National People's Congress, 1993), Chinese citizens shall have at least Bachelor's Degrees to obtain teacher qualifications in upper secondary school. For taking NTCE test, full-time university students in third-years and upwards are also eligible to apply for taking the NTCE test to obtain upper secondary school teacher qualifications. I access this information from the NTCE registration announcement.: https://ntce.neea.edu.cn/html1/report/2307/15-1.htm

More people were needed in teaching geography in Shanghai because the second policy change resulted in a high demand for geography teachers. The second major development which created the context of 'times of change' was a reform to the Chinese University Entry Qualification, known as Gaokao. These changes – which are summarised in Table 1.1 – were intended to be rolled out across China but were piloted in Shanghai from 2014.

Table 1.1 Changes regarding the 2014 Gaokao Reform in Shanghai

Time	**The length of geography courses**	**Geography's status as an optional Gaokao subject**	**The time of Geography test in Gaokao (the time for other subjects)**
Before 2014 Gaokao Reform	A course flexibly taught in two or three years	Each examinee chose one subject from six options (physics, chemistry, biology, politics, history, geography)	At the end of Year 12 (the same time as other Gaokao subjects)
Since 2014 Gaokao Reform (first applicable to Year 10[2] students enrolled in September 2014)	A course to be taught in the first two years (Year 10-11)	Each examinee chose three subjects from six options (physics, chemistry, biology, politics, history, geography)	Near the end of Year 11 (a year ahead of all other subjects' Gaokao time)

These reforms were anticipated to boost the number of students studying Gaokao geography in two ways. First, students now had three 'option' subjects instead of one, meaning geography and other subjects competed less directly. Secondly, and uniquely among these option subjects, students could act strategically - completing their geographical studies in Year 11, 'banking' the result, and reducing their workload for Year 12.

[2] Upper secondary schools in Shanghai are consisted of three academic years: Year 10, Year 11 and Year 12. Shanghai students starting at Year 10 are usually 15 or 16 years old. Hence, Year 11 students are usually 16 or 17 years old, and Year 12 students are 17 or 18 years old. The new academic year in China starts in September. Appendix 1 shows a chart of Shanghai primary and secondary education system.

The effects of these two changes are linked. The increased popularity of geography inevitably increased the demand for new geography teachers. However, many of these new geography teachers had qualified by the NTCE pathway and had not undergone formal teacher education. This immediately raises questions:

- How well prepared were these new teachers to teach school geography?
- Do these new geography teachers differ from previous cohorts in terms of how they understand geography as a school subject?
- How did all geography teachers respond to their subject's sudden surge in popularity?

1.2 Why I want to respond to the problems?

These reforms affected me personally. I was the last cohort of undergraduate students who would graduate with a Bachelor of Science degree in geography and a geography teacher qualification to teach in upper secondary schools. The next cohort would only need to pass the NTCE to qualify as teachers. I studied a four-year undergraduate programme combining geography and teacher education courses. The first three years were mainly university-based. At the beginning of the fourth year, the university arranged a one-month school placement[3] for everyone in my major class. I still remember the first week at school. I felt so 'ignorant' in teaching geography even though I had been studying it for three years. Fortunately, my school mentors spared no effort in supporting and encouraging me in different ways:

- They gave me permission to observe every lesson they taught. [4]
- They answered all my questions about why they chose to teach in specific ways.
- They shared all their teaching materials with me, as well as books and websites that I could look up as resources for preparing my teaching.
- They gave me some of their classes to teach, sat in the back to take notes, and gave me feedback after the classes.
- They introduced me to other geography teachers in the department and encouraged me to observe their teaching too.

[3] The university course in Chinese, "jiaoyu shixi", would be directly translated into "educational internship". However, it was more like a one-month placement for undergraduate students (studying initial teacher education) to get familiar with a school on two main sections: one with a subject specialist to know practical skills about teaching in the classroom, the other with a class tutor to know classroom management, such as communication skills with students, parents and other teachers who teach this class.

[4] I later learned that only some of my university classmates had such a positive experience at their placements. Some of their subject specialist mentors rarely allowed student teachers to observe their classes, let alone teach any. Their mentors arranged for them to 'learn' by marking students' homework and quizzes.

I wondered whether those who qualified by the NTCE-route would experience teacher education differently. While it is essential to be sceptical about rumours, I had heard that the NTCE could be passed with specific strategies and did not require a deep understanding of teaching or one's chosen subject.

I do not have any research evidence to say that NTCE candidates passed the exams with the strategies above. However, as someone with insider knowledge of the geography teaching community in China, the set-up of the NTCE system could allow candidates to write and perform from memory. A possible strategy was to memorise existing showcase lesson plans (often either published in professional journals or available online as exemplars) as templates. Candidates could collect templates by themselves or purchase services from commercial agencies that provided these materials and tutorial classes to 'game' the NTCE. Writing down memorised lesson plans and performing them at oral interviews did not mean the candidates would teach in the same way in the future. They could 'perform' to earn good scores in the NTCE. Even having this as a possibility meant that the NTCE-route system allowed minimal engagement in teaching and understanding one's chosen subject. Figure 1.1 shows the difference between the NTCE route and previous routes to become a certified upper secondary geography teacher in Shanghai.

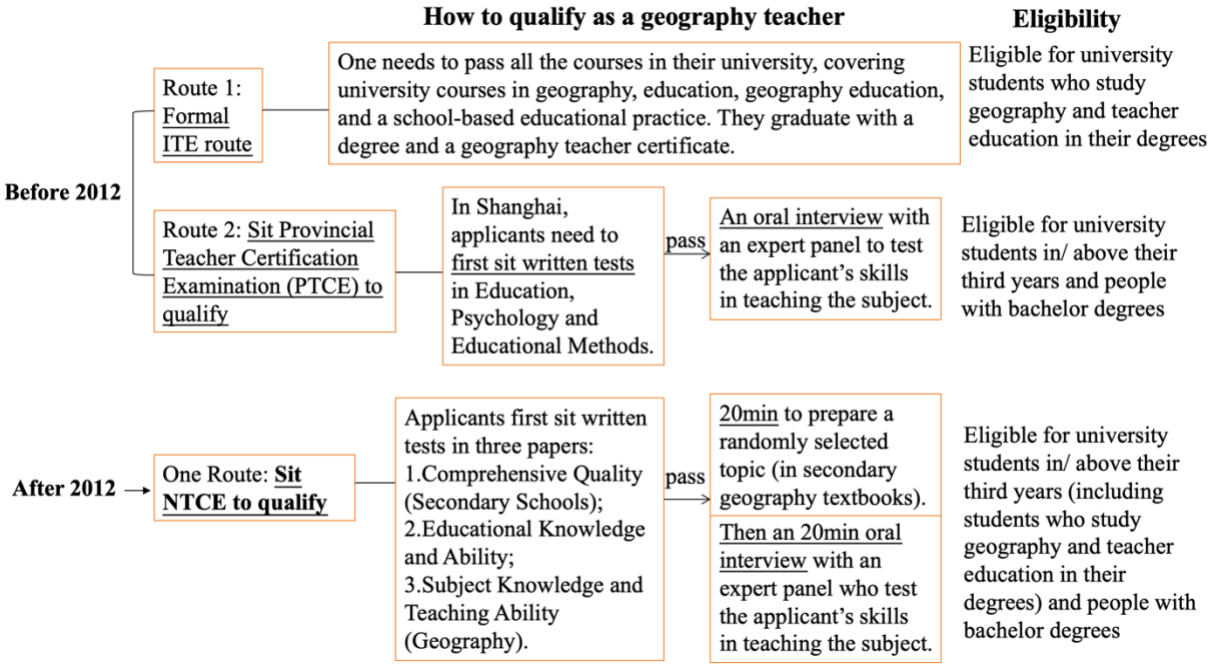


Figure 1.1 Routes to certify as a geography teacher in Shanghai

But the other reform made me more optimistic. I had expected to find employment difficult when I graduated, as geography was not a popular subject at school. However, the 2014 Gaokao reform created what my colleagues and I called 'the Spring of Geography Education' in Shanghai as students rushed to study it, and geography teachers were in high demand. Despite this, I had a dim sense that the 'Spring' could not last. Geography as a school subject was not growing because there had been a sudden recognition of its educational value but because it represented a more accessible pathway to students' success in Gaokao.

The confluence of two reforms matters for my study. If there had only been the teacher qualification reform, few people without geography ITE would even consider qualifying as geography teachers because of the low demand. When the 2014 Gaokao reform led to a high demand for recruiting geography teachers, coupled with the teacher qualification reform, there could be geography teachers who entered the teaching profession without ITE.

I could have stepped into a teaching position in Shanghai when I graduated in 2016. However, what I experienced in the three-year *Curriculum and Didactics (Geography)* postgraduate programme (September 2013 to June 2016) took me on a different path. In the first year, all my courses were university-based. Unlike my undergraduate ITE courses, which had told me to follow the curriculum standards and teach with lesson plans, my postgraduate ITE courses covered studying geography curriculum standards and textbooks from ten countries and the International Charter on Geographical Education (IGU-CGE, 1992), as well as attending academic geography courses. One of the assignments was to design a textbook chapter and provide teaching resources for textbook users. I also started to work as an assistant to an editor (my lecturer) in a professional journal called *Geography Teaching (in Chinese: dili jiaoxue)*. All of these experiences encouraged me to question more about *why* one should teach geography to young people more than *how* to teach geography.

From September 2014, I taught the first cohort of Year 10 students who could take Geography Gaokao in their Year 11. I started my first geography lesson by asking students what they expected to gain from studying geography. I still remember two answers: one student said they wanted to know more about geography on other planets, and another student wrote that they wanted to know what would be examined.

These two answers represented my mixed feelings as a novice geography teacher. I was sometimes amazed by some students' imaginative responses and also often reminded that I should tell them to underline the key points that I thought would be examined. When I was in doubt about the meaning of teaching geography and how to meet different students' various needs in my teaching, I turned to reading literature, and consulting my senior coursemates and mentors. One of the research projects I came across was the *GeoCapabilities II: Teacher as Curriculum Leaders* project. I worked as Professor David Lambert's research assistant in the project in Spring 2015 (March- July).[5] Although I had studied geography and teacher education since 2009, I still had no clear sense of why geography education matters – I hoped this project would help me think more deeply about these questions.

My participation in the *GeoCapabilities* project led me to know and reflect on the geography curriculum making model, powerful disciplinary knowledge, and geo-capabilities (Lambert, Solem and Tani, 2015). I developed my reflections into a diagram in my master dissertation (Figure 1.2), which introduced *GeoCapabilities*, my work in the project, and my reflections.

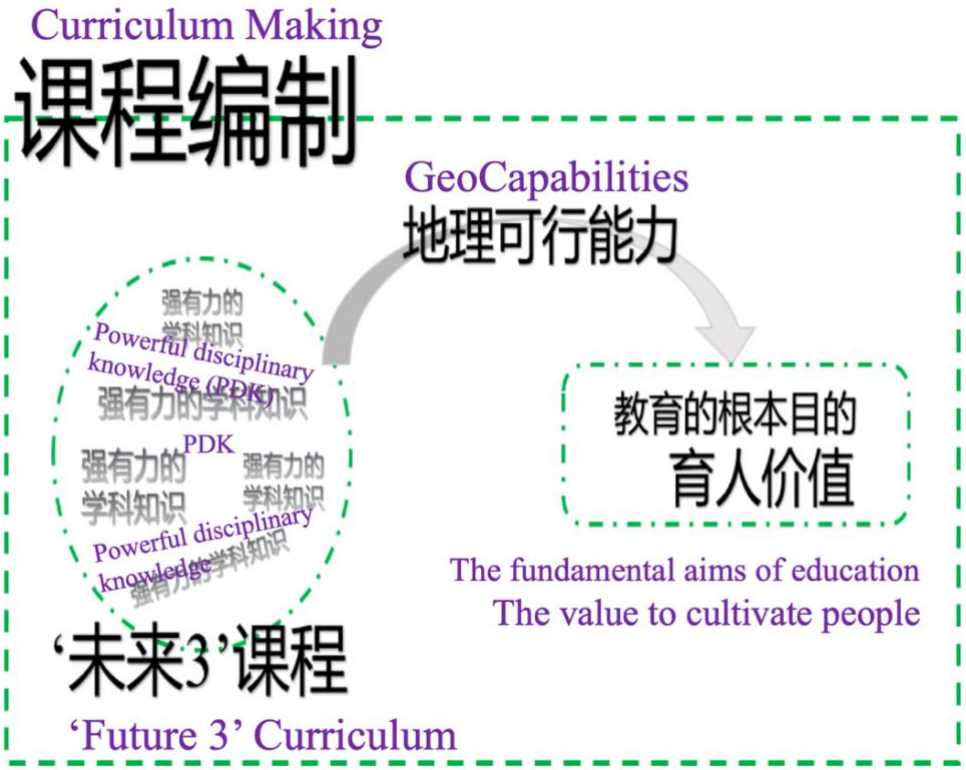


Figure 1.2 Applying Capabilities Approach in Geography Education

[5] I developed two video case studies on curriculum making with London school teachers. See: https://www.geocapabilities.org/training-materials/module-3-video-case-studies/into-practice/

I discussed possible implications by reflecting on *GeoCapabilities* in relation to geography education in China, but it was not easy to communicate these terms in Chinese with the review panel, from which I received a major critique that the ideas in the *GeoCapabilities* project did not apply to China. According to them, the context in China differed from that in England. In China, curriculum making was what curriculum planners do, secondary school teachers just needed to implement the curriculum made by experts effectively. The reviewer did not seem to acknowledge teachers' agency and suggested that teachers only did the delivery work between given content and students. The reviewer raised points which I felt deserved further attention and research. However, at that time, I could not think of any potential supervisor who could advise me on developing geography curriculum making and teacher agency in China. Hence, I started to consider studying abroad to work with scholars specialising in curriculum making and value teachers' role in it to further explore the extent of the issue.

I discussed with my university tutors and colleagues I knew through the *GeoCapabilities* project to consider the best way to approach the research area. I decided to study abroad. My research interests gradually evolved into asking the role of teacher agency in curriculum making. Driven by my strong interest in an apprehension about the Gaokao reform and teacher qualification reform, I would like to know:

- Research question 1 (RQ1): In what ways do Shanghai geography teachers conceptualise geography curricula and curriculum making?
- Research question 2 (RQ2): To what extent do Shanghai geography teachers' curriculum making conceptions align with the Lambert model?
- Research question 3 (RQ3): In what ways does Shanghai geography teachers' agency influence their curriculum making?

To answer my questions, I designed this study to be a qualitative study working with nine geography teachers in Shanghai. I categorised them based on the time they entered teaching:

- **Pre-Reform cohort**: five teachers entered teaching before the Gaokao reform in 2014 (three studied undergraduate ITE, two studied postgraduate ITE);
- **Post-Reform cohort**: four teachers entered teaching after the Gaokao reform in 2014 (one qualified by studying undergraduate ITE, three qualified via the NTCE route but only one studied undergraduate ITE).

1.3 Overview of the thesis

In this chapter, I have introduced the context for my research in times of change: Gaokao and NTCE. It was my situated experiences that grew my interest in pursuing this study. I have also changed over time (from 2015 to 2023) and studied at different places (Shanghai, London, Stirling) to find my position in studying curriculum making with a focus on the role of teacher agency. My position led me to ask my research questions to seek teachers' voices in curriculum making.

Chapter 2 gives a more detailed description of the contexts in Shanghai regarding the Gaokao and NTCE. It portrays the changing status of school geography, different routes into teaching geography, and professional development schemes for in-service teachers. Chapter 3 maps curriculum, geography curriculum, curriculum making and geography curriculum making literature to locate my study further. Chapter 4 looks at how agency is theorised with teachers and curriculum, presenting a specific approach that I can use to design an empirical study with teachers. Chapter 5 discusses the methodological approaches, including my ontological position, research activities in response to research questions, and ethical considerations.

Chapter 6 answers the first research question focusing on teachers' conceptualisation of geography curriculum and curriculum making. It introduces each participant with a short biography and their curriculum making diagram, describing teachers' ideas of their relationship with students, geography and education. It also summarises each participant's professional network and curriculum practice.

Chapter 7 answers the second research question, which compares the teacher diagrams and the existing curriculum making model in geography, known as the Lambert model. The teachers' diagrams in the pre-Reform cohort are more aligned with the Lambert model than the post-Reform cohort. The chapter also elaborates on the Lambert model to account for the Shanghai context to discuss the similarities, differences and reasons behind the differences. It then discusses what is missing in both the Lambert model and teacher diagrams, which moves on to the role of teacher agency.

Chapter 8 answers the third research question by investigating how three temporal (past, present and future) dimensions (Priestley, Biesta and Robinson, 2015) influence teachers' agency for curriculum making. It begins with factors identified in teachers' life histories and professional histories, moves on to their future aspirations, then examines factors in their current situations, and ends with reflecting on the ecological teacher agency model.

Chapter 9 identifies five key findings that emerged from the data and returns to research questions to discuss the implications of each key finding for understanding the research questions and literature.

The final chapter, Chapter 10 concludes with my reflection on this study's original contributions, possible implications, limitations and next steps.

2 Research contexts: times of change

My study concerns reforms to Shanghai's Gaokao, a university entrance qualification, and its effects on curriculum making by geography teachers, as well as NTCE, a national teacher qualification reform, and its impact on routes into teaching. This chapter aims to set the scene for the study and explain why it is timely. Hence, the first section outlines the changing status of school geography in Shanghai, focusing on Gaokao. The second section discusses different routes into teaching with a focus on teaching in state-owned upper secondary schools. The third section introduces professional development schemes after teacher recruitment. The chapter ends with a summary of the key changes and their consequences.

2.1 Geography as an optional Gaokao subject in Shanghai

To investigate the changing roles of geography as a result of Shanghai's Gaokao reforms, it is essential first to introduce what Gaokao is, why the Shanghai Gaokao is distinct, then why the changing status of school geography in Shanghai schools following Gaokao reforms matters.

Gaokao (高考), short for the National Standardised Higher Education Entrance Examination, also known as the Chinese University Entry Qualification, started in 1952, paused in 1966, resumed in 1977[6] and has changed since its resumption (Yuan, 2018). Most of the Gaokao examinees are Year 12 students (age 17-18) in three-year upper secondary schools (Year 10 – Year 12). Initially, geography was treated (alongside history) as a Gaokao subject for examinees planning on majoring in humanities at university (Yuan, 2018). Despite being known as a national examination, the Ministry of Education (MoE) authorised Shanghai to explore its own Gaokao mode in 1985 (Yuan, 2018). In 1987, the "3+1" mode was introduced to Gaokao examinees in Shanghai – this established Chinese, Mathematics and a Foreign language as core subjects and asked students to study one other – either a science (Physics, Chemistry or Biology) or a humanities subject (Politics, History or Geography).

Following the *Decision* by the Central Committee of the Communist Party of China (2013), the State Council (2014) announced a reform to Gaokao which abolished the Humanities/ Sciences division among subjects. Shanghai Municipal People's Government (2014) then

[6] 1977 is the year that Deng Xiaoping resumed Gaokao after the decade of Cultural Revolution (1966-1976), marking a standardised examination system replacing the political criteria (Zha, 2009).

reformed the "3+1" mode to the "3+3" mode, offering Gaokao examinees in Shanghai the freedom to combine humanities and science subjects among their three elective Gaokao subjects. Table 2.1 summarises the changes to geography in the Shanghai Gaokao.

Table 2.1 Geography's changing places in Gaokao (from 1987: in Shanghai Gaokao)

Years	Shanghai examinees' Gaokao subjects	Geography Gaokao
1952	8 subjects compulsory for all: Chinese, Mathematics, Foreign Languages (Russian or English), Politics, History & Geography, Physics, Chemistry, and Biology	Compulsory for all; Shared a paper with history; exams took place around the same time.
1978 (Humanities/ Sciences division formalised)	6 compulsory subjects for examinees applying to major in humanities (including philosophy and foreign languages) at universities: Chinese, Mathematics, English, Politics, History, and Geography 6 compulsory subjects for examinees applying to major in sciences and engineering (including medicine and agriculture) at universities: Chinese, Mathematics, English, Politics, Physics, and Chemistry	Only compulsory for examinees who would apply to humanities; Had a separate paper; All exams took place around the same time.
1987 (Shanghai started its own mode)	3 compulsory subjects: Chinese, Mathematics, and Foreign Language "+1" from Politics, History, Geography, Physics, Chemistry and Biology	An elective subject for Gaokao examinees; All exams took place around the same time.
2014*	3 compulsory subjects: Chinese, Mathematics, and Foreign Language "+3" from Politics, History, Geography, Physics, Chemistry and Biology	An elective subject for Gaokao examinees; Exam takes place at the end of Year 11, a year ahead of other subjects

*Effective for Year 10 (age 15-16) students enrolled in and after September 2014.

Alongside the move to three elective subjects, the Shanghai government also changed the examination schedule for Gaokao. Before the reform, students would sit all Gaokao subjects' examinations at the end of Year 12. However, uniquely among all the subjects, the Shanghai Municipal Education Commission (2015) allowed students to sit their geography examination in Year 11. They termed this examination a "level test" instead of Gaokao. However, the "level test" score would be converted to Gaokao scores and used for university applications. That is, the change of geography examination's name and timing put old wine in a new bottle. It does not change why students choose the geography subject as part of their Gaokao. Hence, I refer to this geography "level test" as Geography Gaokao in my study.

This rescheduling of the examination could be seen as intended to spread students' assessment load over the two years. The fact that it was applied singularly to geography had a distorting effect as more and more students chose to take the subject for purely pragmatic reasons. The massive increase in students opting for geography Gaokao following the reform implies that students were taking the subject to 'bank' their mark in Year 11, leaving one fewer subject to study in Year 12.

However, the Shanghai Municipal Education Commission chose not to disclose the exact numbers of examinees sitting specific Gaokao subjects and Gaokao examinees after 2016[7]. It is not possible to visually share the increased trend of numbers in this thesis. However, the immediate rise of students taking Geography Gaokao in Shanghai is partly evidenced in the participant teachers' interviews from their workload and experiences. Here, I would like to mention that this surge of students opting to study geography had a concomitant effect on the number of geography teachers that were needed within the education system. Section 2.2 will look at the process of becoming a qualified geography teacher in China. But first, I will explore the lack of alignment between school geography and university geography, which explains a challenging transition from studying university geography to teaching geography.

[7] The first reformed geography Gaokao took place in 7th May 2016. At that time, the Shanghai Municipal Education Commission shared the examinee numbers with the public. The Shanghai Municipal Education Commission also run a weekly Newspaper called *Dongfang jiaoyu shibao* (in English: *East Education Times*). In this Newspaper, on 8th May 2016, Sang (2016) wrote exact numbers of examinees: "34,417 examinees took the exam, 33,876 were from Year 11 students, which is 63% of Year 11 students."

I talked about the numbers in the Prologue based on my personal knowledge by being in the geography education community in Shanghai. I was involved in the marking. However, when I searched online for further data to make a diagram to show the trends, I noticed that there was no data for the years after 2016. I reached out to my networks in Shanghai for inquiry, I was told that these data were no longer open for public use.

Geography: humanities at school but sciences at university

Geography occupies a curious place in the landscape of Chinese education; long considered a Humanities subject for school examination purposes (Yang, 1991; Chen, 2013), geography at the university level is treated as a scientific discipline (Wu, Liu and Yang, 2000; MoE, 2018). This duality had marginalised geography at school when Gaokao was divided between humanities (politics, history, geography) and sciences (physics, chemistry and biology).

University admissions saw students who took geography Gaokao as eligible applicants to humanities majors. However, due to geography being a science discipline in Chinese universities, some Schools of Geographical Sciences would only accept applicants who opted for science subjects.[8] The oddity is that students taking geography Gaokao would not be eligible to apply for geography (known as geographical sciences) majors in some universities. Inevitably, the opposite fact was also true: many geography graduates who went on to become geography teachers tended to have studied sciences in their school days, meaning that they would teach school geography (considered as a Humanities subject) despite never having studied school geography for their own Gaokao.

This disconnection between school geography and university geography discouraged students from choosing geography Gaokao as it would limit their options in university majors. Besides, before the 2014 Gaokao Reform, the two phases of school geography in Shanghai upper secondary schools were usually disconnected. The geography curriculum designers intended to give teachers some flexibility to teach the curriculum over two to three years.[9] However, as a result, geography was taught in Year 10 to every student, and everyone took the Qualifying Test for geography at the end of Year 10. The Qualifying Test had two results: pass or not pass. In the "3+1" mode, for those who elected to study geography, many schools skipped Year 11 and only taught them geography again in Year 12. Compared to other subjects which were taught throughout the three upper secondary years, geography was not always taught in Year 11. All of the above factors resulted in geography's marginalisation at Shanghai schools, causing a low demand for recruiting geography teachers in Shanghai. Before the 2014 Gaokao Reform, the job market was in oversupply as geography graduates with teacher certificates graduated yearly, but not always had geography teacher vacancies.

[8] Two universities in Shanghai have geography majors. The more prestigious one used to only accept applicants with science backgrounds, while the other one accepts applicants with both backgrounds.
[9] A university professor involved in developing the Geography Curriculum Standards in Shanghai informed me.

Following the reform, as significantly more students chose geography in the reformed "3+3" Gaokao mode, the situation reversed, and geography teachers were in short supply. However, an unrelated 2010 education reform to the teacher preparation process meant that this shortage of geography teachers could be quickly addressed.

2.2 Qualifying as a geography teacher in China

In 2010, the Ministry of Education (2010) announced a new National Teacher Certification Examination (NTCE). This examination – first offered in Shanghai in 2012 – removed the need for teachers to undergo a process of formal Initial Teacher Education (ITE). Instead, prospective teachers would be allowed to take the examination and, if they passed, would be qualified to teach. Although this reform did not result in the removal of the formal ITE route through university education, it created one unified teacher qualification route applicable for both prospective teachers who studied ITE and those who did not study ITE.

The convergence of these reforms – the NTCE and the 3+3 Gaokao – is relevant to this study because a sudden increase in demand for geography teachers (arising from the Gaokao) coincided with a new less formalised (and quicker) way of accrediting teachers.

According to the Shanghai Municipal Educational Examinations Authority (2012), university graduates with bachelors' degrees and above (as well as third-year undergraduate students in Shanghai universities) were eligible to take their National Teacher Qualification Examination (NTCE) in Shanghai. Examinees taking geography NTCE sat three papers:

- *Comprehensive Quality (Secondary School),*
- *Educational Knowledge and Ability,*
- *Subject Knowledge and Teaching Ability (Geography)*.

The last paper's exam syllabus was based on the school subject's curriculum standards. Plus, there were no restrictions on the examinees' university majors. In other words, the applicants taking NTCE did not need to have studied geography or relevant majors at university as the focus was on geographical knowledge in the school curriculum.

The removal of ITE and a geography major requirement opened the profession to a new range of prospective teachers from diverse academic backgrounds. Although teaching might not have been a popular career destination for graduates in 2012, combining the simplified entry process and increased demand for geography teachers made it a more appealing career.

Overall, the 2014 Gaokao reform in Shanghai increased the appeal of geography as an optional subject and simultaneously increased the recruitment of geography teachers. The demand for geography teachers coupled with the teacher certification reform, seemingly led to more people from different academic backgrounds entering the teaching vocation. The following paragraphs explains how Shanghai state-owned schools recruit teachers. In this study, I did not consider other kinds of schools (e.g. private international schools, vocational schools) as they did not fit the research purpose: first, my study takes in the context of the 2014 Gaokao reform in Shanghai, but most of their students do not take Gaokao in Shanghai; second, my study investigates qualified teachers, but those schools do not require teachers to have teacher qualifications.

The teacher recruitment process in Shanghai state-owned schools

In China, only qualified teachers are eligible to apply for full-time teaching positions in state-owned schools. The process of teacher recruitment starts at the subject department level. If the Head of the Geography Department considers there is a case for additional staff, they raise the case to the school management team for their decision. If the management team approves, the school then apply to the local educational authority. Shanghai comprises 16 county-level districts with varying areas and population sizes; however, each county-level district must seek approval from the Shanghai Municipal Educational Commission (SMEC) before a teaching position can be advertised. When the advertisement is published, eligible qualified teachers can contact the school to express their interest.

The school takes charge of the interview process. The first-round interview usually starts with applicants taking a written test comprised of past Gaokao paper questions. Applicants who demonstrate the required subject knowledge in these tests will proceed to the next round, in which they are observed teaching a lesson. These lesson observations are used to draw up a shortlist of candidates to be interviewed by the head teacher, who makes the final decision on whom to appoint. After the headteacher's decision, the school will notify the candidates to sign up for the local authority's Teacher Affiliation Examination (TAE).

The local authority holds TAE annually for prospective teachers who have passed the interviews in the schools within its administrative district. Only teachers who pass TAE will be considered as registered staff in the schooling system, meaning they can be promoted in professional ranks or move to other schools in China without losing their professional ranks. Passing the TAE also confers eligibility for retirement, which guarantees a pension scheme. In other words, securing a full-time teaching position at a state-owned school means a stable job and a good pension.

The above is the formal recruitment route to become employed as a full-time teacher. There is also an informal route, which was more often the case for teachers teaching marginalised school subjects. Chinese state-owned schools can hire temporary contractors as their supply teachers for subjects. If schools go with this informal route, they do not need to go through the administrative processes beyond schools before hiring teachers. These teachers also would not occupy the schools' quota of full-time employees registered in the schooling system and do not necessarily have a teacher certificate. The school finance team would only pay the supply teachers based on their teaching hours, not covering their social insurance and Housing Provident Fund. Many Shanghai schools' choice preferred the informal supply teacher route before the 2014 Gaokao Reform. The schools tended to hire university geography students as temporary contractors and did not often offer them permanent jobs.

In a nutshell, there are two routes to recruit geography teachers in state-owned schools. Before the 2014 Gaokao reform, Shanghai schools often chose informal routes to recruit supply teachers for geography. Geography used to be a subject taken by only a few students at their Gaokao, so schools did not need many geography specialist teachers. Due to the marginalised status of geography in schools, my lived experience in the geography education community informed me that there were rarely full-time positions to be advertised. After the 2014 Gaokao reform, as a result of significantly more students opting for geography, most schools started to prefer formal routes to recruit geography teachers. Many schools had to take teachers qualified with the NTCE route but had not undergone any ITE.

Explaining the recruitment process is connected to my research, which wants to find out about the new teachers (qualified by NTCE, and had not necessarily studied ITE) and the old teachers (mainly qualified by ITE and studied ITE). When I started to study these teachers,

they talked about their lives as professional geography teachers and mentioned the professional development schemes. Therefore, in the next section, I introduce these professional development schemes for in-service teachers as part of the research context.

2.3 Professional development schemes for teachers

This section describes teacher professional development schemes, following the recruitment process. Participant teachers in the interviews also mentioned these schemes as an essential part of their working lives. Not only were they mentioned by participant teachers, but they were essential background landscapes to sketch the environment in which teachers worked. These schemes would show the hierarchies in the structure from teachers' promotion to entering professional learning communities. From lived experiences, the existing schemes are not built to support the development of struggling teachers, but as a meritocratic system for teachers who are already doing well in the system to achieve more. This section ends with a diagram which sets out the different levels and parts of the schemes and their connections.

Professional rank system

To obtain an initial professional rank in Shanghai, one needs to: (1) have a geography teacher qualification, (2) be a full-time employee in a Shanghai school, (3) pass the Teacher Affiliation Examination (TAE) organised by the local District Education Bureau (DEB).[10] Once a teacher is registered with a DEB (based on their school's district), their initial professional rank is logged in the schooling system. The current professional rank system for teachers is based on the *Guiding Opinions* of the Ministry of Human Resources and Social Security of the People's Republic of China (2015). It includes basic national standards and authorises provinces to set concrete standards. To receive a professional rank promotion, a teacher must first apply to their school when they meet regional and national standards. Their school evaluates all teachers' applications based on the school's quota and recommends some candidates to DEB for an external expert review. The expert panel assesses the candidate teachers by observing them teaching classes and by conducting interviews. The DEB then announces the promotion result publicly. If no one challenges the result, the Ministry of Human Resources and Social Security confirms the result. At the end of the process, the school promotes the teacher to their new rank (see Figure 2.1, more in Appendix 2).

[10] Shanghai has 16 administrative districts. In 2021, there were 262 schools in Shanghai have upper secondary phases, 19,400 full-time teachers employed in upper secondary schools. Source: https://tjj.sh.gov.cn/tjnj/nj22.htm?d1=2022tjnj/C2001.htm

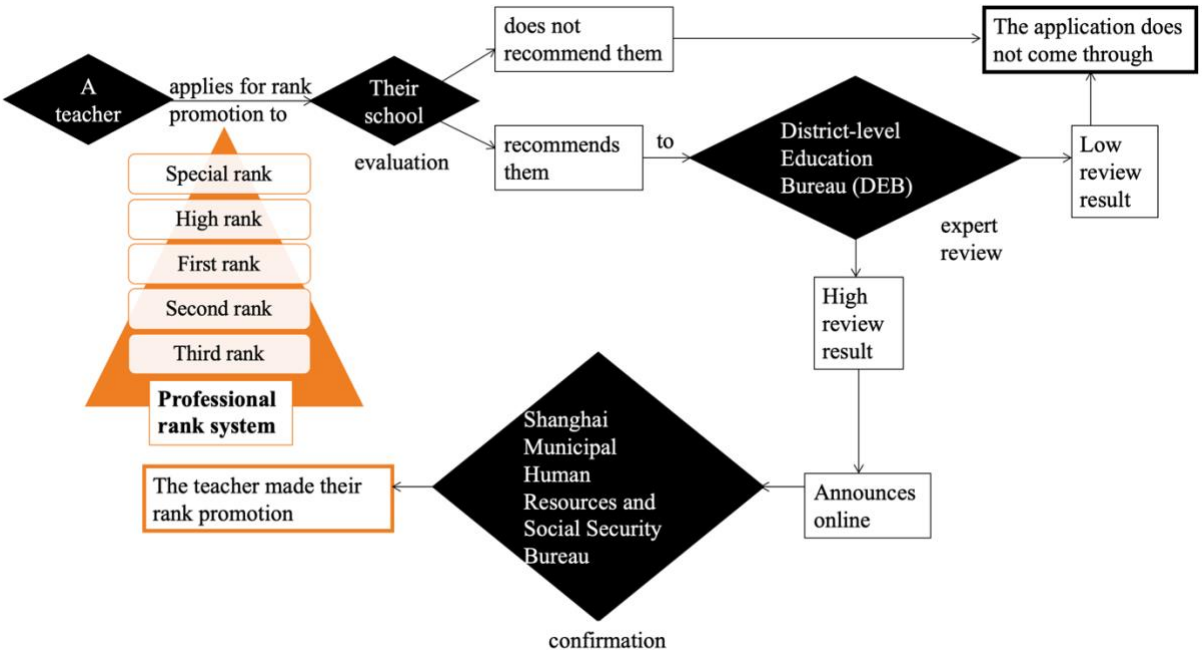


Figure 2.1 A teacher's process to promote their professional rank

Teaching-research offices

For a teacher to move up in their professional rank, improving their professional skills matters. The teaching-research officers (in Chinese: jiaoyan yuan) based in their District Education Bureau (DEB) are seen as important resources for teachers' professional development. The DEB recruits teaching-research officers from experienced school teachers. Cheng (2021) compared the teaching-research office system to the General Teaching Council (GTC) in Scotland. Cheng (2021) considered GTC to be a professional organisation of teachers, representing three rights of teachers — economic benefits, political power and professional rights — and giving teachers professional identities. Cheng (2021) argued that despite Chinese teachers not having their own professional organisation, the teaching-research system was a network featuring research on teaching and learning, acting similarly to GTC. According to Shen and Sun (2021), the teaching-research system had three origins: a heritage of learning from the Soviet Union, the Chinese Government's political intention to control schools effectively and schools' internal requirements for quality education. However, Liu (2021) suggested that the seeds of China's teaching-research system emerged from local practice, rooted in ancient China's culture of viewing teachers as professional moral models and developed towards a formalised system when educational pioneers tried to build a modern school system in China. Overall, the institutionalised teaching-research system and its teaching-research officers are important players in organising research activities related to teachers' professional development in Chinese schools.

Shanghai has a municipal teaching-research office, and each administrative district has their own teaching-research office. Each office has subject officers. There are usually two geography subject officers: one is responsible for organising teaching and research activities for lower secondary schools and another for upper secondary (Figure 2.2). Before Shanghai schools adopted the National Geography Curriculum Standards in 2017, the Shanghai municipal geography subject officer took the lead in developing the geography curriculum for Shanghai students, its subject teaching standards and its examinations. Each district's geography subject officers contributed to the municipal curriculum development, their local curriculum development within the district, subject didactics and assessment. The geography teaching-research officers are also often part of for the external expert panel to review their subject teachers' professional rank applications when a school submits their teachers' applications to the local DEB. In short, the teaching-research system and its officers in Shanghai are crucial players in teachers' professional development and rank promotion.

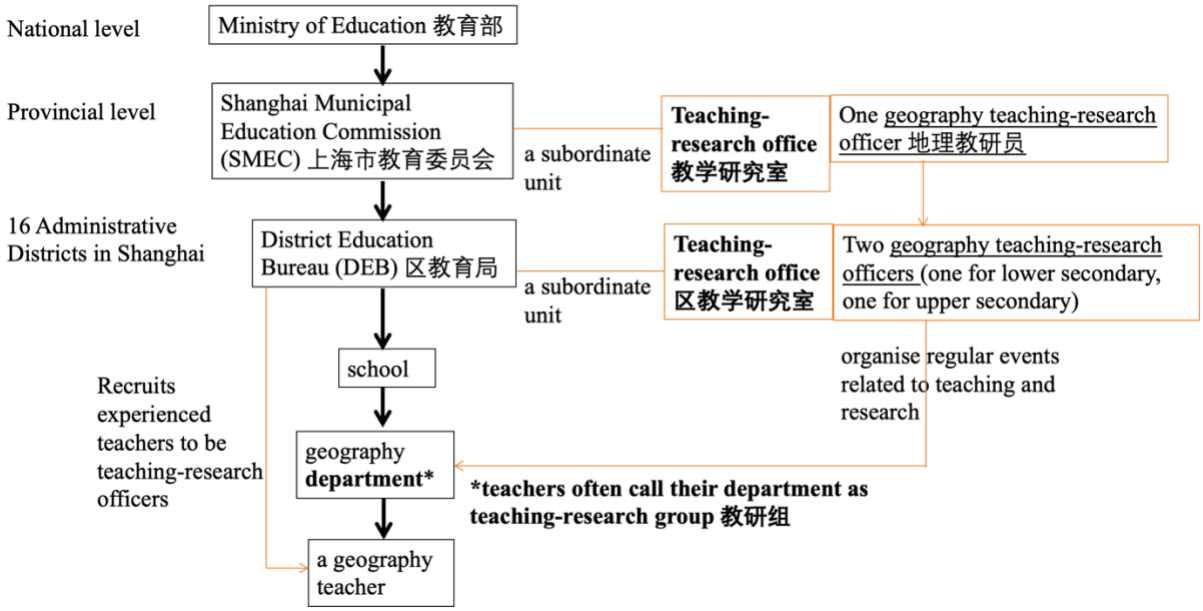


Figure 2.2 The structure of teaching-research system in Shanghai

Master Teacher Hub

While the teaching-research offices represent a formal scheme for professional development affiliated with local educational authorities, the master teacher hubs are known as centres of excellent practice based in schools for building inter-school professional communities. These hubs work in a similar way to the master-apprentice approach.

From 2010, these school-based teacher hubs started to appear in China as a response to the Ministry of Education's *Educational Reforms and Development Guidelines* (MoE, 2010). The *Guidelines* (MoE, 2010) encouraged funded professional development, suggesting that teachers' professionalism could be improved through research-focused teacher training, professional and academic communication. A Master Teacher Hub is run by a Master Teacher and usually named after its founder, who is seen as the 'Master'. They are either a subject specialist known for their action research or a head teacher who demonstrates impressive leadership skills. The master acts as a mentor to other teachers in their Master Teacher Hub. The hub can either apply for funding from its local DEB to recruit trainees within its district or apply for funding from SMEC to recruit trainees across districts in Shanghai.

The Geography Master Teacher Hub is usually led by a Special Rank (the highest professional rank) teacher, some teaching in schools, some are teaching-research officers. However, unlike the teaching-research system which opens resources to all registered teachers through DEBs, the Master teacher hub resources are only accessible to teachers accepted by the hub as trainees. Not all teachers can achieve enrolment into the Master teacher hubs due to the limits on the number in each cohort. For example, one of Shanghai's districts, Huangpu District (2022) requires that each hub has around ten trainee teachers and trainees' professional rank should be at least First Rank. That is, the first step is for a teacher to receive a recommendation letter from their school. The second step is to submit their application and the recommendation letter to the Master teacher. After the Master teacher agrees to accept them, they take the third step to seek approval from DEBs or the SMEC.

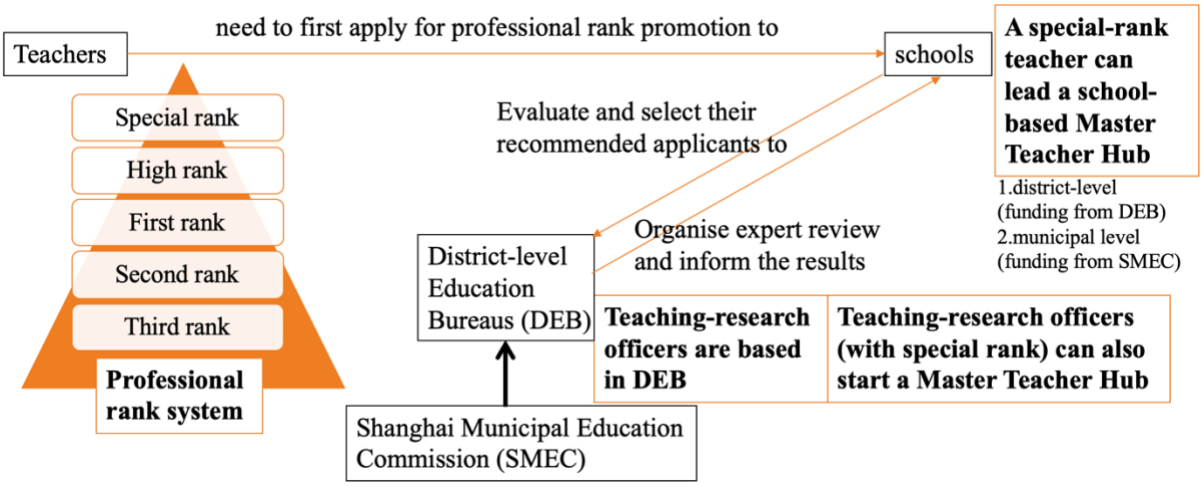


Figure 2.3 Master Teacher Hubs and links to professional rank and teaching-research office

To conclude, the three professional development schemes for teachers in China all entail a structural hierarchy and favour meritocracy (Niu, 2009; Huang, Benson and Zhu, 2016). The hierarchical layers are evident in the application process and eligibility. For either rank promotion or entering and utilising the Master Teacher hub, teachers need to prove that they are already doing well in their profession. The hierarchical layers are evident in the application process and eligibility. For either rank promotion or entering and utilising the Master Teacher hub, teachers need to prove that they are already doing well in their profession. Despite the fact that the teaching-research office system seems to provide professional development materials to all registered teachers, the geography teaching-researcher officers' role in educational authorities makes them stakeholders for teachers' professional ranking, suggesting a hierarchy.

2.4 An unexpected journey

There was an unexpected change in my journey of researching teachers in the Gaokao reform context. Despite – or, perhaps, because of – the sizeable impact of the 2014 Gaokao reform, in 2021, the Shanghai Municipal Education Commission (2021) reversed its reforms and restored the Geography exam to Year 12, in line with other subjects. Thus, the short period between 2014 and 2021 created a temporary expansion in the number of Geography teachers required to accommodate a temporary bulge in the number of students. **My study only concerns the context before the 2021 policy change**. The 2021 Gaokao policy change happened during my data collection, which I will pick up in Chapter 8 Section 8.3.

2.5 Summary

This context chapter discusses the increased status of geography subject in Shanghai schools following reforms to the Gaokao, making it more popular with students. The increasing number of students opting for geography Gaokao has led to an increased demand for geography teachers across Shanghai, which, in turn, has made careers in teaching geography more attractive and more feasible to graduates. At the same time, reforms to the teacher accreditation system meant that new graduates could qualify quicker by taking the NTCE exam rather than undergoing formal Initial Teacher Education programmes.

The next chapter will review the existing literature with a focus on curriculum making to outline possible factors affecting teachers as curriculum makers.

3 Literature review on curriculum making

The preceding chapter highlights two areas worthy of further investigation: the status of geography as a school subject and the status of teachers in mediating it. These areas embody the relationship between the geography curriculum and school teachers. Therefore, the review starts from conceptualising the curriculum. The second section defines geography curricula by discussing the relationships between school geography and academic geography. The third section outlines curriculum making frameworks and the metaphor of teachers as curriculum makers. The fourth section sketches the emergence and development of a geography curriculum making model positioning geography teachers as curriculum makers. The final section evaluates the literature on curriculum concepts, geography curriculum, curriculum making and geography curriculum making.

Two debates are central to in this thesis. The first debate is about the place of geography in the curriculum, its knowledge, its purpose and what should be included. The second debate concerns the teachers' role in helping to make the curriculum. In order to answer the first, it is necessary to trace the history of the development of curriculum over time, and the place of the learner and knowledge within this. In order to answer the second, it is necessary to explore the ways in which theorists have talked about the role of teachers and the role of knowledge in curriculum making.

3.1 Conceptualising the curriculum

This section outlines key conceptions and notions of curriculum in relation to my study from four genealogies (Figure 3.1). Americanisation is one of the most influential traditions in modernising Chinese curriculum studies (Gu, 2012; Deng, 2013), which is the first distinct genealogy. The debates in Anglo-American curriculum studies contribute to the emergence of social realism, which is the second genealogy. Social realism (Young and Muller, 2010) is reviewed for its direct influence on a geography curriculum making model (Lambert, Solem and Tani, 2015), which inspired my study. The third genealogy is the *Bildung-didaktik* tradition, as it influenced both the geography curriculum making model and the Chinese curriculum studies. The final genealogy is the Chinese traditions of curriculum conceptions, in which the Americanisation will be briefly reviewed along with other intellectual traditions. The review shows how key curriculum ideas are debated and are relevant. Engaging with the

key themes in curriculum conceptualisation enables my study to identify tensions and gaps in the various interpretations of the curriculum. This forms the basis for framing my research.

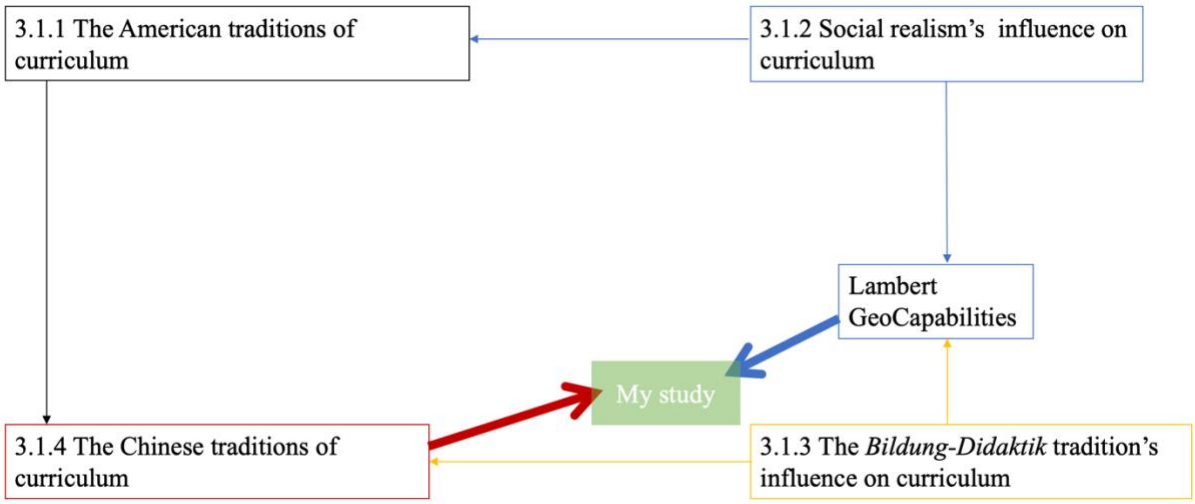


Figure 3.1 The four genealogies of curriculum conceptions informing my study

3.1.1 The American traditions of curriculum

Curriculum as an English word was first defined in 1633, as "a regular course of study or training at school or university" (Jackson, 1992, p. 5). However, this narrow conventional tradition has been critiqued by scholars and the curriculum definitions were broadened. Jackson (1992) named Dewey and Bobbitt as seminal figures to expand notions of "curriculum as educational experiences" (p.7).

For Dewey (1902), a subject-matter based curriculum should be replaced by a learner-based conception to acknowledge that "the child is the starting point, the center, and the end" (p.9). As a result, curriculum is "continuous reconstruction, moving from the child's present experience out into that represented by the organized bodies of truth that we call studies" (ibid, p.12).

Bobbitt (1918) referred to curriculum's etymological meaning in Latin as a race-course, and saw curriculum in education as a "*series of things which children and youth must do and experience* by way of developing abilities to do the things well that make up the affairs of adult life; and to be in all respects what adults should be" (p.42, emph. in original). While Dewey (1902) recognised the centrality of learners' experiences in the curriculum to explore new ways of thinking, Bobbitt (1918) viewed curriculum as a device to create the kinds of

adults needed by society. Despite this, both extended curriculum beyond a fixed course of study with subject-matter. Dewey focused on learners' psychological nature and believed that teachers should plan the curriculum with these psychological considerations. Yet, Bobbitt called for studying social conditions outside of schools to identify what should be taught in the curriculum (Jackson, 1992).

Glatthorn, Boschee, Whitehead and Boschee (2019) described the confluence of the progressive child-centrism (Dewey as an exemplary leader) and the functional orientation (Bobbitt as an exemplary leader) as "Progressive Functionalism (1917-1940)" (p.37). Glatthorn et al. (2019) noticed that Dewey embraced a view of learning emerging organically from social interactions, but Bobbitt preferred "a precise scientific matching of activity with outcome" (p.38). In a nutshell, curriculum conceptions in this era expanded from a course of studies to student experiences. Although Dewey and Bobbitt held contrary views of curriculum, they both strongly influenced their contemporaries, in America and also in China (see Section 3.1.4).

Glatthorn et al. (2019) described the following era as "Development Conformism (1941-1956)" (p.39), during which America transitioned from World War II to the Cold War. The two dominant trends shaping the conceptions of the curriculum were "the interest in the development abilities and needs of youth and a concern with conformity as an educational goal" (Glatthorn *et al.*, 2019, p. 39). An important figure in this era was Ralph Tyler (1949), who identified four fundamental questions to develop curriculum and plan instruction:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained? (p.1)

The four questions, also known as the Tyler rationale, have had a lasting impact on curriculum conceptualisation. These questions also had conceptual origins in both Dewey and Bobbitt (Stone, 1985). For the first question, Tyler (1949) outlined three sources of educational objectives with their proponents:

- studies of the learners advocated by progressive child psychologists;

- studies of contemporary life outside school concerned sociologists;
- suggestions from subject specialists who value knowledge as cultural heritage

The first source clearly has a Deweyan heritage; the second and third sources show the influence of Bobbitt, who was Tyler's mentor. They showed Tyler's belief in the function of knowledge in society. Similarly, the second question also reveals the influence of Dewey and Bobbitt on viewing curriculum as educational experiences. However, the third and fourth questions indicate that Tyler stepped further than Dewey and Bobbitt in effectively organising experiences and attainment. In short, Tyler's curriculum ideas turned from centralising experiences to assessment and evaluation.

Tyler became "the father of educational evaluation" (Nowakowski, 1983, p. 25) and saw the rise of evaluation in assessing the curriculum. In other words, the key components of curriculum conceptions moved away from experiences to measurement of learning. The competency-based conception of curriculum gradually arose, rejecting the traditional knowledge-based curriculum and affiliating itself with child-centrism.

After Tyler, Bloom (1956) proposed a taxonomy to organise educational objectives and assess students' learning outcomes. The taxonomy classified six levels of learning in the cognitive domain: knowledge, comprehension, application, analysis, synthesis and evaluation. Later, Krathwohl, Bloom and Masia (1964) added emotions, attitudes and values as the affective domain of learning with five major categories: receiving phenomena, responding to phenomena, valuing, organisation and characterisation (internalise values). The Bloom taxonomy showed how an educational psychologist who classified learning outcomes to assess them, reflecting that learning, learning outcomes and learners gradually replaced the Deweyan child-centrism. In Section 3.1.4, Bloom and Bloom's taxonomy will reappear for its influence on Chinese curriculum scholars and practitioners.

While educational psychologists were busy redefining conceptions of curriculum through psychometrics for evaluating learning outcomes, reconceptualists (e.g. Pinar, 1978) started to challenge the traditional ideas of curriculum studies and focussed on understanding curriculum. For example, Pinar (2014) considered that the Tyler protocol was associated with

"bureaucratized curriculum development" (p.522). Reconceptualists brought "multi-discursive academic effort to understand curriculum" (Pinar, 2014, p.522):

> historically, politically, racially, autobiographically-biographically, aesthetically, theologically, institutionally and internationally, as well as in terms of gender, phenomenology, postmodernism, and post-structuralism (p.522).

From the 1970s, in North America particularly, but also elsewhere in the world, reconceptualism was a major challenge to the conceptions of curriculum. It took account of discourses originating from other parts of academia (such as race, politics, and gender studies) to look at the curriculum in educational research. The brief introduction of reconceptualism is to provide a context for later discussions. The lack of elaboration on reconceptualism is due to its limited relevance to the theories influencing my study.

Summary and reflection

The Deweyan conceptions and psychologists' work in defining the curriculum are relevant to this study, as they have an impact on this study's conceptual framework on geography curriculum making and how Chinese scholars understand the curriculum. Hence, they are introduced in this section, and both will be elaborated later.

It is worth noting that the Deweyan child-centrism was gradually replaced by learning and learners. Biesta (2009) refers to "the transformation of an educational vocabulary into a language of learning" (p.36) as "the 'learnification' of education" (p.36). The risk of 'learnification' is that it tends to build up hierarchical classifications focusing on evaluating the effectiveness and the outcomes of learning, which is far from Dewey's educational vision but closer to Bobbitt's instrumental view of curriculum and education. The terminology replacement from students to learners implies different connotations about the form that education takes. According to Biesta (2009), learning is "basically an *individualistic* concept" (p.38, emph. in original), which contrasts with education as a concept which "always implies a relationship" (p.39). In addition, learning is "basically a *process* term" (p.39, emph. in original), which "denotes processes and activities but is open – if not empty– with regard to content and direction" (p.39). That is, the rise of learning as a terminology increases emphasis in education on personal capacities, resulting in a competency-based curriculum. The competency-based curriculum focuses on efficiently reaching 'scientific' tests set by psychologists, drifting away from what the learning is for, or where schools should go.

3.1.2 Social realism's influence on curriculum

This section reviews social realism because it has directly influenced a geography curriculum making model which inspired my study. The social-cultural theory's influence leads to "the socio-cultural turn in curriculum, pedagogy and assessment" (Wyse, Hayward and Pandya, 2016, p. 7). One of the prominent parts is social realism. Social realists' view of curriculum and their concept of powerful knowledge are vital influences in developing a geography curriculum making model (Lambert and Morgan, 2010; Lambert and Biddulph, 2015; Lambert, Solem and Tani, 2015), which paves the way to locate my study.

One of the connections between the American tradition (3.1.1) and this mainly UK-based social realism section (3.1.2) is the knowledge question in the curriculum. According to Deng (2015), the reconceptualist paradigm saw the selected knowledge in the curriculum as "a social and political construct" which reflected the interests of those who held power. Young (1971) also once considered knowledge in the curriculum as 'knowledge of the powerful'. However, Young (2013) came to critique his own early work:

> has spent too much time on the political question — who defines the knowledge base of the curriculum? Important though that question is, it has led to a neglect of the knowledge question itself and what a curriculum would be like if an 'entitlement to knowledge' was its goal? (p.107)

Bringing back the knowledge question in the curriculum can be seen as a response to the knowledge question that vanished in the reconceptualist movement of curriculum studies. The following paragraphs introduce social realism with a focus on Young's work on knowledge and curriculum.

Social realism and three futures of curriculum

The social realist research tradition emerged mainly in the United Kingdom, South Africa and Australia (Young and Muller, 2010). Social realists defend knowledge based on critical realism and the works of Basil Bernstein (1924-2000) and part of the work by Émile Durkheim (1858-1917) which inspired Bernstein (Young and Muller, 2010; Deng, 2020). Young and Muller (2010) outline that the social realist view of knowledge recognises:

> (a) the ***necessary objectivity*** of knowledge as a condition for any kind of enquiry or reliable production about the future and (b) that knowledge is ***emergent from*** and ***not reducible*** to the contexts in which it is produced and acquired. At the same time, a social realist approach implies an explicitly historical approach to thinking about future trends. (p.14, emph. in original)

That is, social realists recognise knowledge as both objective and historical. It is different from the positivistic and empirical approach, which views knowledge as "set of verifiable propositions and the methods for testing them" (Young and Muller, 2010, p. 14), which invokes an "'under-socialised' epistemology" (ibid, p.14). It is also distinct from an "'over-socialised'" (ibid,14) approach, which downplays knowledge's propositional character and "reduces questions of epistemology to 'who knows?' and to the identifications of knowers and their practices" (Young and Muller, 2010, p. 14). By rejecting under-socialisation and over-socialisation, a social realist theory view of knowledge involves:

> sets of systematically related concepts and methods for their empirical exploration ***and*** the increasingly specialised and historically located 'communities of enquirers' with their distinctive commitment to the search for truth and the social institutions in which they are located. (Young and Muller, 2010, p. 14; emph. in original).

In short, a social realist approach recognises the duality of knowledge. Here is an example to explain the duality. The latitudes and longitudes are sets of geographical concepts acting as a geographic coordinate system to measure and communicate positions on the Earth. Using them to identify exact locations reflects the objectivity of knowledge. However, the prime meridian in Greenwich (London, England) also showed that the knowledge of longitude emerged from a particular historical context. Based on this recognition, Young and Muller (2010) started to imagine its educational implications as three future scenarios, and Young (2014b) proposed three curriculum futures. Table 3.1 summarises three futures of educational scenarios and curriculum.

Table 3.1 Three futures of educational scenarios and curriculum

Three futures	Three scenarios for the Future by Young and Muller (2010)	Three curriculum futures by Young (2014b)
Future 1	a. fixed and given boundaries b. knowledge is under-socialised c. it attempts to continue the elite system and leads to the overt stratification	A curriculum "that secondary schools have inherited from the nineteenth century" (p.58): knowledge as given; learning expects compliance from pupils; pedagogy as one-way transmission; it offers high-achievers to attend leading universities.
Future 2	a. the end and removal of boundaries b. knowledge is over-socialised c. leads to covert stratification	It weakens "curriculum boundaries between subject" (p.60), introduces "interdisciplinary studies", and "opens to leisure, sports and other community interests" (p.60): knowledge is social constructed; view education as "a means to an end – usually expressed as the expectation of future employment" (p.60); curriculum being progressively vocationalised.
Future 3	a. boundaries exist but can be crossed b. hold together "**knowledge** as real (powerful knowledge) and **the social** as real (knowledge of the powerful)" (p.20, emph. in original)	"It treats subjects as the most reliable tools we have for enabling students to acquire knowledge and make sense of the world" (p.67). It balances between stability of subject concepts, change in content as new knowledge is being produced and learning activities.

In summary, the three curriculum futures present three different views of knowledge. Future1 represents knowledge as 'given' content to be delivered rigidly as facts in the curriculum. Future 2 is sceptical about subject knowledge, dismissing the idea of 'better knowledge'. It weakens the boundaries between school and work to vocationalise curriculum. The Future 2 curriculum swung from prioritising academic content (Future 1) to emphasising pupils' interests and experiences. Future 3 advocates for a subject knowledge-led curriculum but does not take the knowledge for granted. In the Future 3 curriculum, subject knowledge is

"both supported and challenged by the discoveries of the members of the disciplinary communities" (Young, 2014b, p.66), or in Young's words, powerful knowledge.

Young (2014a) put "powerful knowledge as a curriculum principle" (p.65) for the Future 3 curriculum. Powerful knowledge is a crucial concept rooted in social realism. Leesa Wheelahan (2007) first used "powerful knowledge"(p.637) in print. Young and Muller and their colleagues then consistently flesh out, elaborate and popularise this concept (Young, 2009, 2013; Young and Muller, 2010, 2013; Young *et al.*, 2014; Muller and Young, 2019; Hordern, Muller and Deng, 2021; Muller and Hoadley, 2021; Muller, 2023). Young (2014a) suggested three criteria to define powerful knowledge:

- *It is distinct from the 'common-sense' knowledge we acquire through our everyday experience.*
- *It is systematic — its concepts are systematically related to each other* in groups that we refer to as subjects or disciplines.
- *It is specialized* (p.74-75, *emph. in original*)

According to Muller and Young (2019), the power of powerful knowledge comes from:

> a) academic disciplines: the first sense of disciplinary power is from specialised disciplinary discourse produced by academics with "reliability, revisability, and emergence" (p.209); the second sense of power is that disciplines can facilitate meaning making, hence people who access them can "generate unpredictable possibilities" (p.209) beyond their contexts.
>
> b) the school curriculum: topics in the curriculum represents "substantive contents" (p.210) from subjects, which have an epistemic relation to "their parent disciplines" (p.209). The curriculum "signposts" (p.210) the structure of the subject to pupils, which augments their thinking before empowering them to generate new ideas.
>
> c) "power as generative capacity: the capacity to generate new ideas" (p.210)

Curriculum theorists and subject specialists[11] look at powerful knowledge with different focuses (Muller, 2023). The former asks what is "the nature of curriculum" (Muller, 2023, p.

[11] There have been critiques of social realism. I do not have the space to explain them fully in my thesis, but it has been a controversial movement that has been critiqued from education and curriculum theorists (e.g. Biesta, 2014; Scott, 2014; Deng, 2015, 2020; White, 2018) and subject specialists (e.g. Roberts, 2014; Huckle, 2017). I will return to Roberts (2014) briefly in section 3.4 for her emphasis on everyday knowledge and geographies.

24) and how best to theorise it; the latter is more inclined to "pursue theory for curriculum design and subject teaching" (ibid, p.24). However, Muller (2023) realised that the two are connected. The latter has answered the Muller and Young (2019) question on what 'power' is in powerful knowledge and explored an interesting direction on human powers (Lambert, Solem and Tani, 2015; Bladh, 2020):

> We realised that, at its best, this is what we assumed 'powerful knowledge' could achieve: the capacity to think the unthought. In this sense then, 'powerful knowledge' as a curriculum principle is in accord with the aim of education formulated in Didaktik – the cultivation of human powers. The idea of human powers has been developed in an interesting direction by David Lambert's GeoCapabilities Approach which regards the 'powerful knowledge' argument as complementary to it. (Muller, 2023, p.26)

I will return to GeoCapabilities later. The point to make here is that the sociology of curriculum has always been influential to curriculum conceptions in England, from taking knowledge for granted (Future 1) to taking knowledge out of the curriculum (Future2) and now bringing powerful knowledge back into the curriculum (Future 3). Subject specialist educationists like Lambert (based in England) advocate for powerful knowledge led schools, not for returning to Future 1, but to call subject teachers to "take back professional responsibility of 'curriculum making'" (Lambert, 2014, p. 159). Lambert (2014) sees a powerful knowledge led school as an opportunity for teachers to engage with knowledge, the knowledge that helps open pupils' eyes and to know "how the world 'works'" (p.160). To achieve it, disciplinary resources are needed, and Lambert's choice is geography. In other words, Lambert embraces powerful knowledge for holding on to an emancipatory ideal of education, particularly what human capabilities that geography can contribute.

Sectional summary

Introducing three futures and powerful knowledge in social realism matters for two reasons. First, as described by Young and colleagues (Young and Muller, 2010; Young *et al.*, 2014), social realism outlines three kinds of curriculum conceptions (Future 1, Future 2, and Future 3) regarding their knowledge notions. This is helpful to conceptualise the curriculum theoretically. The social realists' view of powerful knowledge offers a framework to imagine the future relationships between knowledge and curriculum. Second, social realism and

powerful knowledge influence Lambert in developing a model of geography curriculum making. Introducing these concepts paves the way to understanding the Lambert model later.

3.1.3 The *Bildung-Didaktik* tradition's influence on curriculum

Anglo-American Curriculum and German-Nordic *Bildung-Didaktik* are two transnational intellectual traditions of curriculum theories related to the practical aspects of curriculum design and development. The latter tradition matters to my study for two reasons. First, this tradition impacts on Chinese scholars' conceptions of the curriculum. Second, Lambert's conceptual development of the curriculum making model also relates to the subject didactics tradition (more later in Section 3.4).

What connects the mainly UK-based social realism section (3.1.2) and this German-Nordic *Bildung-Didaktik* tradition (3.1.3) is *Didaktik.* Willbergh (2016) and Bladh (2020) both made connections between Didaktik and powerful knowledge. Muller (2023) also acknowledges that the didactic theories of Klafki resonate with powerful knowledge for having a strong conception of knowledge. So, what is didactics/didaktik?

The German educationalist Klafki (1995) referred to *Didaktik* as "the theory of contents and curriculum (Theorie der Bildungsinhalte und des Lehrplans)" (p.13). Klafki (1995) considered his development was to revise traditional German pedagogy to evolve "a draft for a 'critical-constructive science of education' and, within this framework, a system of 'critical-constructive Didaktik'" (p.14), and expanded the concept of *Didaktik*:

> *I now use Didaktik generically for both the dimension of objectives and content* and *the dimension of methods, taking the preconditions given at both the personal and institutional level into account. Now I emphasize the primacy of objectives against all other dimensions of instruction.* (p.14, emph. original)

The Klafki Didaktik tradition has an influence on this study for its potential to be a curriculum thinking framework. Bladh (2020) linked Klafki's Didaktik with GeoCapabilities, noting a possible dialogue between a capability perspective on geography's contribution to education and used didactical analysis as a scheme to discuss powerful knowledge. Section 3.4 will return to this. The point here is that as scholars intentionally further the dialogue

between Didaktik and curriculum, curriculum conceptions evolve in the interactions with other relevant concepts from different intellectual traditions.

Connecting *Didaktik* to *Bildung*

As the title of section 3.1.3 suggests, 'Bildung' is symbolic to differentiate the *Didaktik* tradition from the curriculum tradition. Although 'Bildung' is usually translated into English as education, it is not a precise translation as Bildung means more than that. Klafki (1999) sketched two classical theories of Bildung:

- Bildung as capacity for reasonable self-determination (p.87)
- Bildung as subject-development in the medium of objective-general content (p.88)

Klafki (1999) then proposed "allgemeinbildung as Bildung *for all* to develop capacity for self-determination, participation and solidarity" (p.104, emph. original). Hence, Bildung should be seen as both the process of learning for building capacities and the result of this learning process as a personal development. That is why *Bildung* as a theoretical view is more on achieving capacities rather than learning facts, more as a process to activate one's human potential instead of a process of learning (Sjöström and Eilks, 2020). In other words, the *Didaktik* concept embedding in the *Bildung*, therefore could avoid the "learnification" (Biesta, 2009, p. 36) that the curriculum concept experienced in education.

The Anglo-American curriculum and German-Nordic *Bildung-Didaktik* tradition meet in Finland as "a kind of nationally distinctive curriculum cocktail" (Autio, 2014, p. 18). According to Autio (2014), *Bildung* in its Finnish interpretation has a broader meaning than education in English. First, it means to become socialised to "one's culture through school and other official curricula" (Autio, 2014, p. 18); Second, a person individualises their own "studies, activities, and hobbies" (ibid, p.18) to transcend the official curricula; finally, it also refers to an individual being competent to "lead public life" (ibid, p.18), participate in and even reconstruct the society. That is the transformative potential of *Bildung.* Autio (2014) then connects *Didaktik* with *Bildung* to explain their link to curriculum, stating that *Didaktik* draws on *Bildung* to form "the basic structure of any curriculum (Lehrplan: literally 'teaching plan')" (p.18, emph. in original). The curriculum, in this sense, therefore contains "moral, cognitive, aesthetic and practical elements" (p.18). Simply put, the *Bildung-Didaktik* tradition overlaps education and curriculum by viewing multiple elements of curriculum and their

contribution to educative aims. However, the *Bildung-Didaktik* tradition is aversive to the mentality of assessment-driven teaching. This echoes as part of the Chinese traditions on curriculum, which also calls for developing human potential rather than assessment.

3.1.4 The Chinese traditions of curriculum (课程 kecheng)

This section starts by reviewing an ancient Chinese tradition – Confucian – and then moves to more modern and contemporary curriculum conceptions, ending with a contemporary theory of Life-Practice Educology (Ye, 2020). Introducing the Confucian tradition helps to show that curriculum conceptions in China have roots in emphasising the curriculum's social and moral contribution from the beginning. How curriculum studies were modernised in China showed the confluence of curriculum traditions and Didaktik traditions. The Life-Practice Educology (Ye, 2020) is significant, not just because it is a Shanghai educationist's theory in which my empirical study took place, but also because it exhibits a way of thinking to see education as self-formation, resonating with the *Bildung* tradition.

Ancient China: the Confucian tradition

The Confucian tradition of curriculum has a social function. Kecheng (课程), the two corresponding Chinese characters for the term curriculum, first appeared independently. According to Zhang and Gao (2014), ke (课) means "function" (p.118) and cheng (程) means "many people gathering in one room and sharing" (p.118). It was not until the Tang Dynasty (A.D. 618-907) that kecheng was first put together to explain Confucian Classics, meaning:

> It is the moral person who must plan, supervise, and uphold the curriculum (ke-cheng). That is legitimate. (Kong Yingda as cited in Zhang and Gao, 2014, p. 118)

That is, the Confucian tradition of curriculum, roots curriculum in a moral ground, viewing curriculum as a moral event to construct an ideal society. To a certain extent, the Confucian tradition's focus on morality mirrors the moral dimension in the *Bildung* concept. From the Tang Dynasty, Curriculum in China was not limited to school curricula, but included "all the great undertakings in society" (Zhang and Gao, 2014, p. 119). Zhang and Gao (2014) also refer to a Song Dynasty (A.D. 960-1279) Confucian philosopher Zhu Xi (1130-1200) 's view on kecheng, who took school curriculum as a "great cause" (p.119):

> You should provide plenty of time for students, and make good use of the time to teach the curriculum… You should develop curriculum not in many books, but focus on what's chosen for learning. (Zhu Xi as cited in Zhang and Gao, 2014, p. 119)

The Confucian tradition of curriculum is visible in Chinese scholars' intercultural communications with Western scholars. For example, Craig (2020) recalls Chinese and Asian collaborators informing her that the meaning of kecheng is "people discussing the teaching and learning journey" (p.5). Craig (2020) considers this kecheng conception to have organic connections with "Schwab's curriculum commonplaces and the notion of curriculum as a lived experience" (p.6). I will revisit Schwab's curriculum commonplaces in section 3.3. The point to make here is that the Confucian tradition of curriculum is more than an ancient Chinese heritage; some of its core ideas are evident across cultures.

Modernising China with different intellectual traditions

Unlike ancient China, which was dominated by Confucian thought despite the changing dynasties, modern China has undergone a tortuous journey of social changes with educational thoughts originated outside of China. From the late nineteenth century, "western educational ideas and theories" (Cong, 2014, p. 96) started to influence the modernisation of the education system in China. The initial stage was mainly Chinese scholars introducing Western works through their Japanese translations instead of directly translating the original works. The disciplines in Chinese educational studies all started through importation, based on a requirement of educational studies after the establishment of teacher education colleges (Ye, 2004). By integrating four reviews of educational research in modern China (Ye, 2004; Gu, 2012; Deng, 2013; Cong, 2014), Table 3.2 summarises influential intellectual traditions to modernise curriculum studies in China.

Table 3.2 Five intellectual traditions to modernise curriculum studies in China

Characteristics of the historical periods [year] (Gu, 2012; Deng, 2013)	Influential thinkers/ people in education (Gu, 2012; Cong, 2014)	Intellectual traditions in Chinese curriculum studies (Ye, 2004; Gu, 2012)
Borrowing from Japan (and Europe) [1901-1919]	Sensaburo Tatibana Johann Friedrich Herbart	Chinese scholars started to accept European didactics from Japan
Americanisation [1919-1949]	Franklin Bobbitt **John Dewey (visited China 1919-21, most influential)**	Chinese scholars (many returning students from United States) translated Bobbitt and Dewey's work, and started to practice and adapt them in Chinese schools
Sovietisation [1949-1957]	Ivan Andreevich Kairov	Chinese scholars translate Soviet Union's educators work and have to accept all without doubt or criticism.
Left-leaning [1958-1966] and Cultural Revolution [1966-1976]	Mao Zedong	Mao-ism dominates everything. The imported educational and Confucian ideas were removed.
Reform and opening-up (re-open to western theories) [1977-2000]	Aleksandar Tsankov Vasyl Sukhomlynsky Jerome S. Bruner **Benjamin Samuel Bloom (visited China in 1986)**	The imported ideas have diverse sources but share a common feature: focus shift from delivering knowledge to development of learners' abilities.

The emphases in Table 3.2 are mine to highlight influential educational thinkers. We could see Johann Friedrich Herbart (a German educational theorist) as one of the earliest foreign thinkers who influenced Chinese education modernisation. Gu (2012) considered that Herbart's educational ideas could be accepted by China not just because it was widespread by

then, but also because its emphasis on individual development and contribution to society accorded with the Confucian tradition of morality.

Bobbitt, Dewey and Bloom all first appeared in Section 3.1.1, reappearing here in the context of their influence in China. They all had their books translated into Chinese soon after their English publications.

Dewey is the most influential Western scholar in modernising Chinese education. According to Gu (2012), Dewey's pragmatism education was the leading theory for Chinese education in the 1920s and 1930s, and almost all Dewey's writings had Chinese translations. His two-year (1919-1921) visit to China was also actively documented, translated and facilitated by his students; they studied in America and returned to China as active and influential scholars and social activists (Zhang and Sheese, 2017). The influence of Dewey also started to come back in the 21st century (Zhang and Sheese, 2017), particularly during the 100th anniversary of Dewey's visit to China (Ralston, 2019; Waks, 2019; Zhang, 2019; Zhou and Li, 2019).

According to Chu. Z. (2019), when Chinese scholars had been debating about education but did not have any effective solutions or directions, Dewey arrived in 1919 as a third party, gently criticised Chinese traditional culture, and suggested that China could develop philosophy and education as approaches to achieve democracy and science in the society. Dewey arrived in China on 1st May 1919. On 4th May 1919, Chinese university students led mass protests due to China's hopeless case[12] in the Paris Peace Conference. The May Fourth Movement started as a student-led protest on 4th May 1919, and evolved into a cultural and political movement, then an intellectual revolution (Chow, 1960). For Dewey, it was also the encounter of May Fourth related protests and sequential social changes made him decided to stay longer in China (Keenan, 1977; Zhou and Li, 2019). Zhou and Li (2019) noticed that Chinese scholars combined the Western democracy and science with the wisdom of Chinese tradition to achieve "creative transformation" (p.751). Su (1996) outlined how Dewey's former student Tao Xingzhi transformed Dewey's theories to implement in the 1920s China, as guiding principles to prepare rural teachers and a centre for village renewal (Table 3.3).

[12] China was involved in World War I, declared war on Germany in 1917, and contributed substantially to the Allied victory (MacMillan, 2002). At the Paris Peace Conference, the Chinese government thought they could get back the German concessions in Shantung. However, the 'peacemakers' decided that Japan would take over German rights in Shantung. When the Chinese delegates sent this information as a telegram to China on 3 May 1919, it led to the 4 May movement. (Chow, 1960; MacMillan, 2002)

Table 3.3 Dewey' ideas and Tao's transformation (adapted from: Su, 1996, Su's translation)

Dewey's ideas	**Tao's transformation**
School as society	Society as school
Education as life	Life as education
Learning by doing	Unity of teaching, learning and reflective acting

In other words, Dewey's influence in China is related to Chinese scholars' reinterpretation of Dewey. According to Chu (2020), the first reinterpretation emerged when the interpreter chose appropriate Chinese words to translate Dewey's lecture notes written in English. Dewey's lectures were heuristic instead of imposing, which made the lectures popular but also means different listeners could understand in different ways. Chu (2020) pointed out that *Democracy and Education* (Dewey, 1916) had eight versions of Chinese translations and three different Chinese translations of democracy, meaning that reinterpretation could emerge from one' cognition ability. Chu (2020) noticed one of the earliest typical reinterpretation came from Cai Yuanpei, by then the principal of Peking University, on 17th Oct 1920, made connections between Dewey's theories and Confucian educational visions, named Dewey as "Western Confucius" (Cai, 2011, p. 240) and awarded Dewey an honorary doctorate. On a different view, Waks (2019) suggests that Deweyan pragmatism and Confucian educational ideals do share common starting points:

- both consider that an individual is situated in a particular history and culture and cannot be separated from their socio-cultural and natural environments;
- both view knowledge with an essence of practicality, viewing that the existence of knowledge is to achieve harmonious and peaceful action.

Overall, the fruitful dialogues Dewey started in modern China are still being discussed in contemporary Chinese scholars' intercultural communication with international scholars. I will not give more details as this was not directly relevant to the thesis. However, it is vital to be aware that the influence of Western scholars in China is often not just from their writings, but also the way their work was received and interpreted by Chinese scholars. Dewey visited China at a time when many Chinese people wanted to see changes in the education system, and he was accompanied by his students who understood his educational thoughts and were capable of interpreting his lectures into Chinese, both verbally and published in newspapers.

It is important to notice that Dewey became the most influential figure in Chinese curriculum studies not just for his thought-provoking theories of curriculum but also for the timing, the translations, and reinterpretations of his theories to fit the Chinese circumstances.

The internationalisation of academic work is fundamentally cross-cultural collaboration and co-creation across different temporal dimensions and spatial sites (Zhang, 2019). This influence emerges through interactional dialogues between Chinese scholars and scholars from other cultures. Similarly, the Bloom taxonomy also gained a significant influence along with Bloom's visit to China and Chinese educators' translation of his work and attempts to apply the taxonomy in teaching and learning practices (Gu, 2012). In short, there is a tradition of advocating for student development in modernising Chinese education and curriculum studies.

However, as Table 3.2 shows, the intellectual traditions originated from Europe, the United States, and the Soviet Union. These traditions are not well-connected with each other. Instead of one period evolving into another, each new intellectual tradition was based on a violent renunciation of the past, whether it be Sovietist denunciation of Western ideas or Maoist criticism of Soviet and Western ideas (Ye, 2004). That is, the intellectual traditions of curriculum and its consequent curriculum conception experienced several instances of being torn down and built back up again. This upheaval has meant that China has struggled to develop its own intellectual tradition in curriculum studies.

According to Levy (2019), China is an economic latecomer whose modernisation cannot avoid the influence from the outside, especially from those who developed their economy. The same situation happened to curriculum studies. Scholars in modern China do not need to reinvent the wheel of curriculum conceptions as there have been established communities of curriculum studies in which scholars define and redefine conceptions of curriculum. It is not simply borrowing and transplanting, but it is to be communicated with existing scholarly efforts, to learn from them, to try to use them, and to adapt these academic works into their Chinese contexts.

Contemporary China

As for the contemporary conceptions of curriculum in China, Chinese scholars have reconnected with the traditional Chinese wisdom, and adapted constructivism, multi-intelligence theory and postmodernism to the Chinese educational context, which has its own characteristics (Zhang and Gao, 2014). However, there are still two major challenges. First, theorising curriculum in China is not immune from political and ideological changes. The field of curriculum studies and its influential thinkers are heavily associated with and sometimes even limited by political and ideological changes. Secondly, as a latecomer in curriculum studies, Chinese scholars have not made a distinctive contribution and instead still follow and adapt the existing theories in (mainly Anglo-American) curriculum studies to the Chinese context. Nevertheless, the long history of curriculum (kecheng) wisdom rooted in ancient China may potentially contribute to theorising curriculum in Chinese scholars' active engagement with foreign curriculum theories and concepts. One example is presented below.

Life-practice Educology

The *Life-practice Educology* coined by Ye Lan (2020) is one notable contemporary Chinese theory of education, despite not being directly in conceptions of curriculum. Ye is an influential educational thinker in China who first led an educational reform in Shanghai to create dynamic and vibrant classrooms where teachers and students not only teach and learn, but also feel the surge and growth of life. Ye (2016) referred to Dewey's "Education as Life" (p.277) and Tao Xingzhi's "Life as Education", pointing out that they noticed what education means for students and the society, but did not involve in teachers. According to Ye (2016), every class was also part of teachers' life activities, teaching was not just for students to grow, nor just finishing tasks, but also an "embodiment of teacher's own life value and self-development" (p.277). In other words, Ye recognises that classroom teaching has meaning for students and the society, but also has personal significance for teachers.

Ye (2020) rooted her theory in her research collaborations with schools all over China, valued practitioners' contributions to explore pathways to school reform, and named schools that collaborated with her research as "life-practice" schools. Ye (2004) expressed her concern with Chinese educational research depending on translating foreign educational thoughts and intersections with other disciplines like psychology and sociology, but a lack of theory rooted in practice in China. In an interview, Ye (2021) expressed that the biggest challenge in her practice with school reform is to change teachers' previous conceptions, as

teachers were framed in the "good teacher fallacy". That is, a teacher designs what to teach and finishes the class in a timely way without students interrupting. Ye (2021) also explained her choice of naming her theory Life-Practice Educology:

> In my educational research career, the word that touches me the most is life (shengming), and the most empowering word is practice (shijian). The fundamental view education (jiaoyu) is that: **teaching the knowledge of nature and society, cultivating the self-consciousness of life**[13]. The first half means that education teaches natural sciences, which can also be understood as the vast universe, and social sciences, which includes every wealth in human civilisation; education cultivates life self-consciousness, which means waking up a human. A child may not be clear about who they are, what they like to do, and what they can do. Through education and guidance, their inner self-awareness is woken up, eventually reaching life self-consciousness. When one person has life self-consciousness, they can have an intrinsic spiritual power to take the initiative to grasp their own destiny. (my emphasis, mainly my translation, no page number)

The long quote suggested that Ye's *educology* was more than the Western concept of *Educology* as knowledge of education (Steiner, 1977); it also suggested an ecological metaphor of education. Ye (2020) referred the connotation of the meta-concept "Life-practice" as *genes*, which was a metaphor to the helix structure of DNA and also coincided with the Chinese tradition of Yin-Yang structure. For Ye, although the Western Educology concept also used *genes* as a concept, her theory also inherited and further refined the Chinese expression of education. Deng (2023) proposed that *Pedagogics* was a more accurate translation of Ye's theory than *Educology*. According to Deng (2023), the European continental Pädagogik tradition was first introduced into China, from Herbart to Pestalozzi and Montessori, then the Soviet pedagogic theories after 1949, hence Ye's work was built upon the pedagogic tradition in China with an origin in continental Europe. The point was that academic theory's internationalisation added new meanings to the term in its initial language via translation. It used to be mainly English-to-Chinese importations, but Chinese-to-English exportations also started to emerge.

Sectional summary of 3.1.4

[13] This sentence is translated into English in Ye (2020)'s preface.

Taking the time to explain the scholarly knowledge exchange via language translations matters to this study for two reasons. First, Ye's theory represented a different theorising process and uses a different language than Anglo-American scholars' work. Her poetic language did not offer a clear prescriptive definition of curriculum, but a heuristic framework to re-think the purpose of education in school reforms, which inevitably involved broadening notions of curriculum and teaching. Ye's work was also relevant as the local literature as Ye and her team collaborated with many Shanghai schools to theorise her Life-practice Educology. And my chosen case studies of teachers worked at Shanghai schools.

Second, both Dewey's influence in China and Ye's theory of internationalisation were crucial to position myself and locate this study. My study sits in this space of in-betweenness created by crossing between two languages. My intention was not to limit theories and concepts to their origins but to bring them into dialogues with an awareness of contexts. By bridging dialogical communications among different conceptions based on their relevance to my study, this study located in where the different conceptions of curriculum converged.

Deng (2013) also noticed that Ye's Life-practice Educology resonated with the *Didaktik* tradition, although Ye was not directly influenced by it. Deng (2013) argued that Ye's view of connecting life and practice echoed the *Bildung-Didaktik*'s value of content's educational value and relevance to students' interests and experiences. Ye (2020) took it further as she viewed this interplay between content and learner as not just students' life journey but also teachers' self-development journeys, which would bring teachers a sense of fulfilment. That is, content was not given but emerged in teachers' re-organisation during the preparation of teaching, interaction with students and reflection after teaching. For this study, seeing the connections between *Bildung-Didaktik* tradition curriculum and Life-practice Educology helped to clarify my image of curriculum: it is not a standalone concept, but always intertwines with jiaoyu, bildung, teacher-learner-content interplay, didactics and educology.

3.1.5 How do curriculum conceptions contribute to my study?

The four components come together in a key thread in conceptualising the curriculum, which informed my study but also revealed a gap which could be bridged by my study. Figure 3.2 shows how four sections were linked with each other and how my study was directly influenced by GeoCapabilities (in section 3.1.2) and the Chinese traditions (in section 3.1.4).

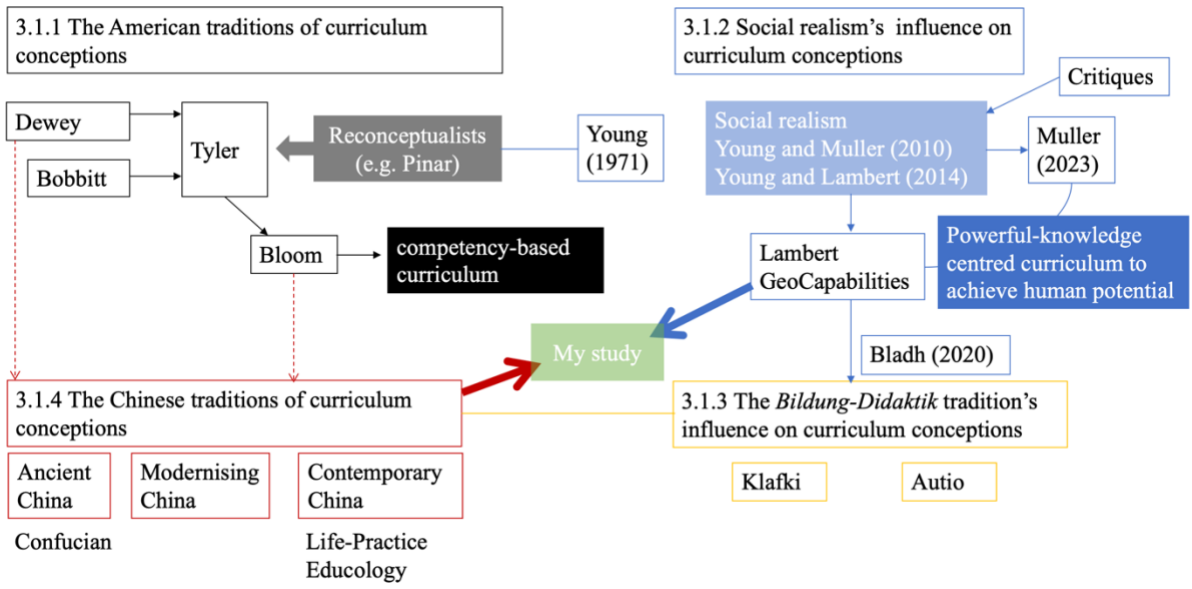


Figure 3.2 Locating my study in the curriculum conceptions literature review

The gap revealed itself when American curriculum conceptions became internationalised, having conversations with European *Bildung-Didaktik* and Chinese *Kecheng*, both understanding curriculum and education differently. Although the review pointed out their interconnectedness, the classical ways of understanding curriculum did not always consider the confluence of different intellectual traditions. The Chinese traditions of curriculum have been influenced both by American and *Bildung-Didaktik* traditions. In my study, I would address curriculum conceptions influenced by different traditions to bridge the gap.

The key thread started with Dewey expanding the curriculum from subject-based content to child-centred educational experiences. The review – from early American traditions to social realists – helped to clarify the key ideas of curriculum that had developed from content (as given knowledge) to experiences, then affiliated to assessment and measurement of learning outcomes, i.e. a competency-based curriculum. Social realists such as Young and Muller (2010) responded to the competency orientation and asked for a knowledge turn, in their words, a powerful knowledge-led curriculum to Future 3. They claimed this future was different from Future 1 where knowledge was fixed and under-socialised, and Future 2, which was over-socialised and emphasised learning outcomes. Young and Lambert (2014) traced the power of powerful knowledge back to disciplinary communities. Building on the work of social realism, Lambert developed a curriculum making model in the geocapabilities approach (Lambert, Solem and Tani, 2015), which inspired my study.

Tracing the knowledge back to discipline also brought up an unavoidable question:

> What is the relationship between academic discipline and school subject (which is more often taught as a curriculum)?

The next section applies this question to the specific case of geography.

3.2 Defining geography curriculum: the status of geography as a school subject

This section mainly consists of three parts:

- Possible curricular relations between academic geography and school geography
- What is geography (discipline)?
- School geography: a subject being put in different categories at different places

As this study planned to investigate geography curriculum making, reviewing geography and geography curriculum to find how they were constructed became a prerequisite. In order to understand the geography curriculum, possible curricular relations between academic geography (discipline) and school geography (subject) shall be analysed. Hence, section 3.2.1 outlined possible relations between school subjects and their curricular relations with academic disciplines. It starts with a classification of possible relations between academic disciplines and school subjects, followed by a case of geography in England to explicitly show that the geography curriculum has a more complicated relationship with the discipline of geography and geography as a school subject, pointing out the importance of context.

Section 3.2.2 reviews scholarly efforts to define academic geography, outline features of the geography discipline and what makes the geography discipline in China different from the international community. It first points out geography's connections with other disciplines by tracing back to both Ancient Greece and Ancient China. Then the science inclination of geography is pointed out with explicit links to the influence on Chinese geography from geography in United States. This is followed by discussion of geography's alternative humanitarian inclination.

Section 3.2.3 reviews different regional conceptions of school geography, connecting its status in secondary schools and its (lack of) alignment with university-based academic

geography. The focus was on secondary geography due to its relevance to the participants of this study, who were secondary geography teachers. The final part summarised previous parts to combine what this research means by geography and geography curriculum.

3.2.1 Possible curricular relations between academic geography and school geography

Although this study is mainly about secondary geography curriculum, sorting out possible relationships between the academic geography discipline and school geography subject would be a prerequisite to set the scene. Therefore, this part introduces the work of Stengel (1997) on possible curricular relations between academic disciplines and school subjects, and provided a specific case study of geography in England.

I started with Stengel (1997) as her study contributed to my research. The Stengel (1997) classification will return at the end of this section to discuss the passages of establishing geography subject and discipline, and later in analysing the Lambert model on geography curriculum making and its implications for curriculum making analysis. The case study based on Goodson (1981, 1993) outlined a history of Geography in England that contributed to my study in three ways. First, it described the context for where Lambert proposed the curriculum making model; second, it paved the way for discussing school geography and university geography in China for its similarity to geography in England; third, it was also helpful to understand (dis-)connections between school geography and academic geography.

The Stengel classification

Stengel (1997) proposed five possible relations between academic discipline and its related school subjects, which is summarised in Table 3.4.

Table 3.4 Five possible discipline-subject relations (adapted from Stengel, 1997)

Relationship	Description
Continuous	Subject and discipline "can best function as mirror images, lending the assumed prestige of one to the process of the other" (p.594)
Discontinuous	Subject centres care, leading a caring curriculum aiming to develop "competent, caring human beings" (p.594). This curriculum proposal holds a discontinuous view between discipline and

		subject, letting subjects outside "the traditional curricular halls" (p.594) into curricular, e.g. vocational preparation and life skills.
Different but related	Discipline preceding	School knowledge is a distilled version of disciplinary knowledge, which embodies the accumulated knowledge of society. The relationship assumes teachers engineer the transformation process of their acquired disciplinary knowledge into subject knowledge.
	School subject preceding	School subject is "logically and experientially prior to academic discipline" (p.595), and it "must consist of the experiences of life lived fully" (p.595). In other words, this view values children's lived experiences, attending to students' needs and interest.
	Dialectic	It recognises subject knowledge's "logical expression in the academic disciplines" (p.596) and also sees life experiences as "source and impetus" (p.596) for disciplines' logical achievements. Teachers transform students' environment "so as to effect the experiences that will enable the student to come the already known" (p.596). This view's representative figure is Dewey.

While Stengel (1997) features the continuous relation with "mirror images" (p.594) and the discipline preceding relation with "transformation" (p.595), it is arguable that the discipline preceding view is "always employed in conjunction with the continuous position" (Deng, 2012, p. 44) as it views school subjects as a result of an academic discipline's transformation. The following Goodson review of geography will be helpful to differentiate them in detail.

The case study of Geography in England

Goodson (1981, 1993) took a socio-historical approach to investigate the evolving relationships between school subjects and academic disciplines, taking geography in England as one of his case studies. Goodson (1981) referred to Layton's three stages of science's evolution as a school subject in the secondary school curriculum (Table 3.5), and noticed that geography also went through similar stages where "subjects and disciplines are in constant flux" (p.167).

Table 3.5 Layton's model of the evolution of science (adapted from Goodson, 1981)

	Stage 1 (p.167)	Stage 2 (p.167)	Stage 3 (p.167)

Subject	Staked its presence by justifying its "pertinence and utility"; "the dominant criterion is relevance to the needs and interests of learners"	Emerged "a tradition of scholarly work in the subject"; "the internal logic and discipline of the subject" become influential in selecting and organising subject matter.	"Specialist scholars who lead inquiries in the filed" determine subject matter selection through their judgements and practices
Teachers	Rarely trained, but brought "missionary enthusiasm"	Recruited from "a corps of trained specialists"	"Constitute a professional body with established rules and values"
Students	Attracted to the subject as it bears on "matters of concerns to them"	Attracted by the subject's "reputation and growing academic status" and its relevance to their concerns	"Are initiated into a tradition, their attitudes approaching passivity and resignation"

The Stage 1 of Geography started in late nineteenth century, established a place in some English schools for its pragmatic utility in the imperial expansion (Goodson, 1981), and geographers promoted geography as "the Science of Distances – the science of the merchant, the stateman and strategist" (Goodson, 1993, p. 57). According to Marsden (1997), the pragmatic utility focus on geography's contribution to the British Empire over academic priorities resulted in "some of the geography (and indeed education) was being taken out of geographical education" (p.244). At Stage 1, geography as an academic discipline did not exist yet, hence the Stengel (1997) classification was not applicable.

A symbol for Stage 2 was an establishment of Geography in English universities. In 1887, because the Royal Geographical Society (RGS) offered to cover the costs, Geography in England started to have the first university lectureship (Holt-Jensen, 2018). It started from Oxford giving Halford Mackinder a readership (Goodson, 1993). Mackinder led the establishment of the Geographical Association in 1893, aiming to further the knowledge of geography and teaching geography from schools to universities. According to Mackinder (1903), "geographers can be made" (Mackinder 1903 as cited in Goodson, 1993, p.60) in Schools of Geography at universities. The focus on building up Geography as a discipline

resonated with the Layton Stage 2. It also marked the emergence of a "continuous" (Stengel, 1997, p. 594) relationship between school geography and university geography, but this initial continuity started from the subject to the discipline.

However, geography's passage to Layton Stage 3 was not as smooth as science. Although Geography in England was accepted as a school subject and the selection of subject matter was determined by specialist scholars in 1950s, some scholars noticed that pupils did not find geography relevant to their needs and posed problems for university specialists controlling school geography (Goodson, 1981). Meanwhile, geography as an academic discipline faced its own crisis at universities for recognition. To deal with the crisis, Geography in England did not continue its regional tradition, but started to build up a geometrical side to achieve "geography's long aspiration to be viewed as a scientific discipline" (Goodson, 1981, p. 175). Geography's long march finished in 1970 with an acceptance as an academic discipline in U.K. universities (Goodson, 1981). The Layton model cannot explain the back-and-forth journey of geography gaining its academic subject status.

Overall, geography's evolution from a low-status school subject to redefining itself as an academic discipline shows an aspirational upwards process rather than a discipline translating a downwards domination pattern (Goodson, 1993). However, as university geography gradually achieved its academic discipline status, the definitions of geography were through university scholars' academic rigour instead of school teachers' pedagogic purposes (Goodson, 1993). That is, the continuity from subject to discipline gradually evolved towards "different but related: discipline preceding" (Stengel, 1997, p. 595). To sum up, the passage on geography's history on subject and discipline shows that the relationships between subjects and subjects are not static nor for-granted. English geographers, from subject groups to university scholars, actively changed geography's status as a school subject and then as a university discipline, as well as relations between subject and discipline.

3.2.2 What is Geography (discipline)?

The previous section presented a Stengel (1997) classification of possible curricular relations between academic disciplines and school subjects, then detailed on it with a case study of Geography in England. This section provides three ways of thinking about Geography at a disciplinary level:

- Always connected with other disciplines
- Science inclination: Geography as part of Earth Sciences
- Humanitarian inclination: Geography as human-environment relations

In each case, a conceptual discussion with international literature appears first, followed with some Chinese geographers' scholarly work to clarify whether Geography in China aligns with the international Geography community or not. Because Geography was introduced to China, in order to trace why Geography in China had certain traditions and features, a review of Geography was like in the international literature was essential to explain the genealogical connection. Among all the international perspectives, I chose to mainly look at Geography in United States because Americans influenced both academic geography in Chinese universities from 1921 (Wu, Liu and Yang, 2000) and school geography as a subject in Chinese schools from 1839 (Chen, 2013). Geographers in United States were largely influenced by Germany to develop geography towards geographical science (Hartshorne, 1939; Martin, 2015). Hence, geography, from its first appearance in China, was a product of knowledge 'exportation chain'.

- **Always connected with other disciplines**

As with Curriculum, defining Geography is complicated and it has yet to be an agreed concept amongst the academic community of geographers. However, geographers in United States (Pattison, 1964; Murphy, 2018), United Kingdom (Livingstone, 1992; Unwin, 1992; Cresswell, 2013), China (Wu, Liu and Yang, 2000) and Norway (Holt-Jensen, 2018) all commonly traced geography back to ancient Greeks: Geography means to write about the Earth. Cresswell (2013) pointed out that the earliest writings of (now seen as) geography were written by "Greek philosophers and historians" (p.16). Eratosthenes of Cyrene ~~(c.276 BC- c. 195.194 BC),~~ calculated the circumference of the Earth and developed latitudes and longitudes as a system of coordinates to locate places and measure distances (Holt-Jensen, 2018). According to Russo (2004), it was Eratothenes' librarian role that enabled him to access extensive survey results to calculate the Earth. Although Eratosthenes is now known as who laid down a foundation for geography, back in the day his occupation was librarian, and this calculation of Earth also used mathematics and contributed to astronomy. From its birth, geography was connected with other disciplines.

A breakthrough for geography to institutionalise itself as a science discipline started from Alexander von Humboldt and Carl Ritter in Germany (Hartshorne, 1939; Holt-Jensen, 2018). According to Hartshorne (1939), Humboldt's dominant interest was studying nature, and he was trained for geography nor for science, but "for governmental service" (p.49); Ritter's "chief attention" (p.51) at university was to combine natural sciences, history and theology. In other words, these two modern founders of geography contributed to regional and systematic geography, but their contribution benefited from studying other disciplines. This sets a foundational tone of geography being a field 'learning from' other fields of knowledge, in other words, connected with other disciplines.

Geography translated into Chinese as Dili 地理

The Chinese translation of geography is Dili (in Chinese character: 地理), having a connection to the Confucian tradition of historiography (Tang, 1994). That is, Confucian scholars' traditional approach to geography was historical, and they used mainly texts to describe geographical order of the imperial world. These descriptions were historical records of places, to put it in another way, the Chinese traditional studies of geography were written by historians (Tang, 1994). When foreign missionaries introduced and returning students translated the Western thoughts on Geography to China, Geography in China gradually evolved into a modern discipline (Zou, 1998; Guo, 2000). Geography first appeared in Chinese schools before its establishment as a university discipline (Chen, 2013). In short, the Chinese Geography tradition was related to the History discipline and importation.

Tracing to the origin of geography in ancient Greece and dili in ancient China shows that geography's connections with other disciplines exists across origins in different cultures.

- **Science inclination: Geography as part of Earth Sciences**

The scientific inclination of geography in China was influenced by Geography in United States, and American geographers were largely influenced by German geography (Martin, 2015). Hence this section started with American university geographers' science inclinations, then moved to Chinese geographers' science inclinations.

American geographers' aspirations of geographical science

Academic geography in United States began essentially as physical geography, which made its beginnings intertwined with geology, meteorology and climatology (Martin, 2015). Back in 1939, a prominent American geographer Hartshorne (1939) did a historical survey of geography and credited the contributions of European geographers, notably the Germans, for developing geography. Hartshorne (1939) summarised the nature of geography into four deviations from its historical development:

- Attempts to construct a "scientific" geography
- Geography as a science of Planet Earth
- Geography as a science of relationships
- Geography as the science of distributions (p.173)

Science appeared in all four deviations, clearly showing geographers' aspiration for Geography to be recognised as a Science. However, Geography as a new subject trying to claim itself as a scientific discipline was like starting an academic war. For example, although the Geography programme at Harvard University had a modest but optimistic expansion, it was suddenly terminated in 1948 (Smith, 1987). According to Cresswell (2013), the termination was related to a geologist's protest against geography was "not really a proper discipline any way" (p.79), "not intellectually rigorous" (p.79) and "not really science" (p.79). Following the elimination of geography, American geographers started the Quantitative Revolution to make geography more scientific (Hart, 1982), encouraging spatial analysis throughout the discipline (Newby, 1980). The Quantitative Revolution gradually gained international influence and embraced statistical and mathematical procedures, as well as computers, leading to a further revolution called the Geographical Information Science (GIS) revolution (Yano, 2000). Livingstone (1992) highlighted that the tradition of geography is to "change as society changes" (p.347). To sum up, Geography in United States emerged with an aspiration to be a science, and American geographers also fought for geography's status as a geographical science to survive in the American universities.

How did Geography in America influence geography in Chinese universities?

William Morris Davis studied geography and geology at Harvard's Lawrence Scientific School, and first worked as a meteorologist before teaching geology at Harvard in 1879 (Daly, 1944). One of his students and later Harvard colleagues was Robert DeCourcy Ward, who later held first professorship in Climatology in the United States (Brooks, 1932). From

1915, Ward started to supervise a Chinese student Chu Coching, who wanted to specialise in a doctorate in meteorology at the Earth Sciences Faculty. In 1918, Chu finished his thesis (A New Classification of the Typhoons of the Far East), received his PhD in meteorology, and returned to China, then started teaching geography and meteorology in Chinese universities (Chu, 2004). In 1921, Chu founded the first Geography department at university level in China with two majors: geography-meteorology and geology-mineralogy (Wu, Liu and Yang, 2000; Chu, 2004). The historical timeline clearly shows the American influence on geography as an academic discipline in Chinese universities, as well as a tradition to affiliate with meteorology, geology and earth sciences.

Chinese geographers' aspirations of geography as geographical science

Although the Chinese Geographical Society was established in 1909[14], it was not until Chu's establishment of a Geography department that Geography started to become institutionalised at Chinese universities (Wu, Liu and Yang, 2000). Clarifying American academic geography's foundational influence in Chinese academic geography echoes the curriculum tradition in China, which also went through an Americanisation period (1919-1949, in section 3.1.4). Since China was a latecomer in modernising its education system, the existing models in other countries had been prototypes for Chinese academics to learn from.

It is crucial to consider Chu against a background. In 1908, the American government established the Boxer Indemnity Scholarship Program for Chinese students, which encouraged Chinese students to study in America and increased American's influence in reforming China (Ye, 2001). Chu was motivated to study abroad and learn advanced technology to serve the nation and society (Zhang, 2010). In 1910, Chu was enrolled as a Scholarship student to America, he first studied agriculture and changed to meteorology in 1913 (Zhang, 2010). Chu majored in meteorology for his master's and doctorate at Harvard, but also studied courses like geology, glaciology, seismology and regional geography (Zhang, 2010). During his time in America, Chu was actively advocating "*kexue jiuguo* (Science Saves the Nation)", involved the *Zhongguo kexue she* (Science Society of China) and wrote articles in the Society's journal *Kexue* (Science) (Zhang, 2010). Given his

[14] In 1909, Chang Hsing-wen established the Chinese Geographical Society (CGS) in Tianjin. However, there was the 1911 Revolution and warlord period after that, then the First World War. The CGS did not reach much influence in promoting geography (Wu, Liu and Yang, 2000). In 1934, Chu Coching led to found the Geographical Society of China in Nanjing. In 1950, the two organisations then merged into the current Geographical Society of China (GSC), with Chu as the first elected President.

background, it made sense for Chu to establish an Earth Science faculty merging geology, geography and meteorology. According to Zhang (2010), as geology and meteorology were more theoretically developed in China than geography, Chu focused on introducing geography as a discipline in his textbook, introducing theories in modern physical geography and an inclination to human geography. In other words, Chu has always viewed geography as a science discipline, not just for academic purposes but also for a personal patriotic reason for valuing Science's potential to save the Chinese Nation.

Chu's influence in academic geography continued in the People's Republic of China. Chu was a vice president in the Chinese Academy of Sciences from 1949 and had a long-standing leading role in the geography and scientific communities (Wu, Liu and Yang, 2000). According to Zhang (2010), Chu was dedicated to improving geography's status as a science, especially geographical research's contribution to agriculture and geographers' contribution to national tasks. Chu (cited in Wu et al., 2000) defined geography as:

> Geography is a science which studies the formation and development of the geographical environment, the geographical environment's regional differentiation, and production distribution. It has distinct **regionalism and comprehensiveness**, as well as function to apply, which is closely related to every aspect of **constructing a national economy**… the synthesis research should become the main direction for geography. Only by doing so can geography have its synthesis and regionality applied to make a unique contribution to building socialism (p.4, my emph.).

Chu (cited in Wu et al., 2000) was aware that geography is not a cutting-edge science itself but considered it could "use cutting-edge sciences and technology to take ground" (p.5), encouraging geographers to improve geography's "competency in big national tasks" (p.5) by using "theoretical knowledge from biology, physics, chemistry and mathematics" (p.5). In short, Chu's earlier intention of studying abroad to promote national and societal development had been consistent in his professional career. Academic geographers in China inherited Chu's intention. In 2017, by then the President of the Geographical Society of China, Fu (2017) developed Chu's definition and geography and updated its characteristics:

> Geography is a subject that explores spatial distribution, time evolution and regional characteristics of geographical elements or geographical complexes. Geography is unique in bridging social sciences and natural sciences and has characteristics of **comprehensiveness, interdisciplinary research and regionalism**… The development

> of Chinese geography needs to be rooted in the **major needs of national strategies**, and plays an important role in the studies of urbanization development, coupling ecological processes and services, water resources management and geopolitics. Under the country's major needs, China's geography tends to achieve geography theory innovation, new methods and technology applications, develop a disciplinary system with Chinese characteristics, and contribute more to national and global sustainable development. (p.1932; extracted from the English abstract; my emph.)

In summary, although Chu and Fu led the Geographical Society of China at different times, they both viewed that:

1) regionalism and comprehensiveness as geography's characteristics, and
2) geography shall respond to national strategy and major needs.

The sustaining tradition of connecting geography with a patriotic narrative implies that geography in China still justifies its significance through "pertinence and utility" (Goodson, 1981, p. 167). In other words, academic geographers in Chinese universities continue what Chu started a century ago, viewing geography as a science subject with social values to promote national development.

Following Fu (2017), Chen[15] et al. (2021) proposed a modified disciplinary structure of geographic science with four secondary disciplines: integrated geography, physical geography, human geography and information geography. According to Chen et al. (2021):

> We hope this new disciplinary structure can play a breakthrough role in improving the branches of geographic science, promoting the development of emerging disciplines under the framework of geographic science, and better serving the international and domestic development needs in the new era. (p. 2073; extracted from their English abstract)

From the quote, it is clear that academic geography in China is still defined as a science discipline and further brands itself as a framework to develop secondary disciplines. Regarding university geography, major questions researched by academics in China are

[15] Chen Fahu was elected as the president of President of the Geographical Society of China. His term started from December 2018, and will end in December 2023. The previous president was Fu Bojie, whose term was from December 2014 to December 2018. Chen Fahu is a geographer, geologist and climatologist.

internal, which is different from Anglophone geography, which is embodied globally, as demonstrated in major international journals (Qian and Zhang, 2022). That is why the way Chinese geographers define and teach geography at Chinese universities is not in alignment with Anglophone geography. Academic geographers in China consider geography as a scientific discipline which serves national needs; hence, it tends not to critique the government or society. It was Chinese intellectuals' concern with patriotism that brought geography into Chinese universities in the 1920s, but this awareness of geography serving national needs also shaped Geography in China as geographic science for the Nation.

- Humanitarian inclination: Geography as human-environment relations

The humanitarian inclination of Geography was a response to Geography's Quantitative Revolution, which was at the expense of its regionalism tradition, resulting in a disconnection between geography at undergraduate education and school geography (Newby, 1980). Newby (1980) was concerned that as the premise of the Quantitative Revolution implies that school geography and university geography do not need to have the same educational objectives, geography's contribution to help people "appreciate moral and ethical dilemmas" (p.16) may be stultified as the Quantitative Revolution did not address any morality or ethics. The humanistic geography approach provided a different way to think geography:

> Humanistic geography achieves an understanding of the human world by studying people's relations with nature, their geographical behavior as well as their feelings and ideas in regard to space and place (Tuan, 1976, p. 266).

The purpose of humanistic geography is to better understand humans and their conditions. To have a humanistic perspective, humanistic geography values geography's connections with humanities disciplines, i.e. history, literature, the arts and philosophy (Tuan, 1976). According to Tuan (1976), humanists build on "scientific perspectives on man" (p.267) rather than denying them, and humanists are better at "interpreting human experience in its ambiguity, ambivalence, and complexity" (p.275) than their scientific colleagues. In other words, the humanitarian inclination recognises that Geography's connections with other humanities disciplines and geography's aspiration to bring scientific perspectives.

Tuan's humanistic geography is not merely a critique of geography as spatial science, but centralises humans in geography, highlighting the importance of subjective and unique experiences can attach meaning to our environment (Cresswell, 2013, 2024). For this study,

recognising the existence of the Quantitative Revolution, then humanistic geographies, and other geographic concepts, help me see resist a view of geography as either science or humanities. I embrace a non-binary view of geography being both science and humanities. The binary view implies a discipline shall be either science or humanities, which did not fit the discipline of Geography. As a late-comer in academic disciplines, geographers once had to earn itself a place in the university. The examples of English (Goodson, 1981, 1993), Chinese (Wu, Liu and Yang, 2000; Chu, 2004; Fu, 2017) and American geographers (Hartshorne, 1939; Newby, 1980; Hart, 1982) showed that Geography aspired to be a science. However, it came with a cost of disconnections between geography in undergraduate education and school geography. That is, geography would be seen as a science in the university, while school geography is still often viewed as a humanities subject (see more in Section 3.2.3).

In terms of the relationship between school subjects and academic disciplines, geography did not start with discipline-preceding relations. On the contrary, school geography appeared before university geography in the United Kingdom, the United States and China. However, as geography established itself at universities, the discipline became more influential in defining geography. Regarding the academic discipline's international influence, academic geography tradition in America influenced the founding of a scientific geography discipline in Chinese universities. However, academic geography in China gradually became more connected to its national development rather than involving itself in disciplinary revolutions and turns internationally. That is, academic geographers in China still propose geography as a geographic science, while the international geography community highlights geography's connections with both sciences and humanities.

3.2.3 School geography: subjects in different categories

This section starts by identifying three categories of school geography. As a school subject, it is the government's curriculum documents decides specific categories and arrangement for geography. Geography as a school subject is expressed in various ways in different national settings (Butt and Lambert, 2014). The expression of school subject also partially reflects different understandings of Geography as a discipline.

The second part of this section compare school geography in China and England. The detailed description of the Chinese curriculum is essential for this study to talk about teachers who teach the curriculum. The detailed description of English geography curriculum is relevant because I will use a geography curriculum making model which was developed in the English context.

By organising this section this way, it is clear first to recognise that school geography does not always mean the same when the national context changes. However, Chinese and English geography curriculum also have some similarities in conceptions of geography. The similarities can be explained through the work of Stengel (1997) on possible relations between school subjects and academic disciplines.

School geography: humanities, social studies and/ or environmental studies

Geography as a school subject is expressed in various ways in different national settings (Butt and Lambert, 2014). School geography as one of humanities subjects means geography is taught as a separate subject in the humanities department. This category applies to countries like China (Chen, 2013; Xuan, Duan and Sun, 2015), Botswana (Tabulawa, 2002), England (Walford, 2001) and Singapore (Chang, 2011). School geography as part of social studies means geography is taught as part of a subject named as social studies, which is related to social sciences. Example countries would be Chile (Salinas-Silva, 2022), France (Graves, 2001; Straub and Ravez, 2020), Japan (Ida and Shimura, 2015), Sweden (Molin and Grubbström, 2013; Örbring, 2021) and most states in the United States (Stoltman, 1990; Lambert, 2018). The third category considers school geography as part of environmental studies. In Australia, geography is taught with history as Studies of Society and Environment (Maude, 2014; Casinader, 2016). In Finland, geography is most often seen as part of the natural sciences in secondary schools and is taught by teachers who also teach biology, whose university major subject was biology and geography as a minor subject (Uhlenwinkel *et al.*, 2017). The three categories of geography as a school subject co-exist in different places across the globe. The second and third categories of school geography also reflect that the way of thinking about the geography discipline's connections with other disciplines.

However, geography curriculum content within the same category could be quite different. For example, Japanese schools focus on regional geography, teaching local environment in primary schools, then Japan and world geography in lower secondary, then world geography

in upper secondary (Ida and Shimura, 2015). Swedish schools value geography in connecting the environment, democracy and sustainable development in both natural sciences and social sciences (Örbring, 2021). To put it in another way, the content and value of geography as a school subject are not necessarily similar, even in the same category. It is, therefore, important to zoom in and clarify what is taught in Chinese school geography.

Secondary geography in China and England

Presenting secondary geography in China and England together is helpful for two reasons. First, they are both in the category of Humanities and taught as separate subjects in the secondary phase; second, introducing English school here geography paves the way for understanding the curriculum making model (Lambert and Morgan, 2010) developed in the English context (see section 3.4). Table 3.6 shows the key content in Chinese curriculum standards (MoE, 2011, 2017) and English national secondary geography curriculum documents (Department for Education, 2013, 2014b, 2014a).

Table 3.6 Secondary geography subject content in Chinese and English schools

Geography subject content in China	Geography subject content in England
Lower secondary (Age 12-15; Year 7-9) The Earth and the Map World Geography Geography of China Local Geography	Key Stage 3 (Age 11-14; Year 7-9) Locational knowledge Place knowledge Human and physical geography Geographical skills and fieldwork
Upper secondary (Age 15-16; Year 10) **Geography I:** Foundation of Earth Sciences; Physical Geography; The Relationship Between Natural Environment and Human Activities **Geography II:** Population; Urban and Rural Areas; Selections of Locations for Industries; Environment and Development	Key Stage 4 (Age 14-16, Year 10-11) For students who choose GCSE Geography: Locational knowledge Maps, fieldwork and geographical skills Place: processes and relationships Physical geography: process and change People and Environment: processes and interactions Human geography: processes and change

Upper secondary (Age16-18, Year 11-12) For students who take geography Gaokao, they need to finish three modules: • Foundations of Physical Geography • Regional Development • Resources, Environment and National Security They can choose optional modules based on personal interests from three focuses: • **Natural field:** Astronomy Foundation; Oceanography; Natural Disasters and prevention; Environment Protection • **Humanities field:** Tourism geography; Urban and rural planning; Political geography • **Technology and practice:** Apply geographical information technology; Geography fieldwork	Key Stage 5 (Age 16-18, Year 12-13) For students who choose AS Level and A level Geography: **Core content (60%)** • The four core themes; Knowledge and Understanding: 1. Water and carbon cycles 2. Landscape systems 3. Global systems and global governance 4. Changing place; changing places • Geographical skills • Fieldwork (requirements relating to both physical and human themes, representing over all 60%) **The non-core content (40%)** The awarding organisation selects the content, which draws a balance of physical geography and human geography and ensures at least half of them addresses people-environment questions and issues

The lower secondary geography in China focuses more on regional geography than its counterparts in England. While the Chinese geography curriculum has a focus on places and physical spaces, the geography curriculum in England looks at the procedural concepts. Both systems emphasise physical geography and human geography at upper secondary level. From Year 11, Chinese students who take geography study it, and the curriculum standards emphasise on different secondary disciplines reflecting academic geography discipline, or more broadly, Earth Sciences. It is also worth noticing that the 'humanities field' is more inclined to geography's utility to support decision making (Fu, 2017). Geography, as a subject in Chinese schools and universities, still justifies its usefulness and relevance to societal needs. Bear in mind Goodson's (1981, 1993) work, pragmatic utility was also what geographers in England used to earn its place as a school subject.

Considering the Stengel (1997) classification, the discipline preceding relation is obvious in both documents for highlighting physical geography and human geography. However, the discipline of geography in Chinese and English academia may have a different research focus. Hence, Chinese school geography's physical geography section is more associated with earth sciences, and the human geography section is more associated with economic development and political geography. The English school geography seems to highlight more on relational places, environmental geography and people-environment relations. Moreover, the Chinese documents focusing on resources, national security and political geography also show an influence from political and contextual factors outside the subject and discipline.

Inquiry-based learning had different roles in Chinese and English geography curriculum. According to Lee, Kriewaldt and Roberts (2022), inquiry learning is not a main focus in the Chinese curriculum but it is visible in the Chinese curriculum documents. It is not advocated as a unique way for geography to construct knowledge, nor student-centred. One of the reasons was that high-stakes examinations remain a challenge to student-centred learning. However, the English curriculum's emphasis on fieldwork makes it an inquiry-rich curriculum, inquiry is also included in its standardised assessments (Lee, Kriewaldt and Roberts, 2022). Roberts (2013)'s *Geography Through Enquiry* approach is foundational to school geography in England. It is based on the inquiry learning approach ~~she advocates that~~ Roberts (2014) argues that powerful knowledge itself is not enough to make the curriculum powerful, the power shall be fostered with teaching and learning approaches like inquiry. Inquiry encourages students to have deep and critical engagement with knowledge, teaching and pedagogy. This is because inquiry comes from young people and children's lives rather than the academic discipline. In inquiry learning values children's voice and their everyday knowledge. To sum up, geography curriculum in England centres on inquiry learning more than the Chinese curriculum.

Core competencies in Chinese School Geography from 2017

This section introduces the four competencies featured in the Chinese National Curriculum Standards for Upper Secondary School Geography (MoE, 2017). They are considered as geography's contribution to developing students' core competencies. The Chinese students' core competencies is a framework proposed in 2016 (Figure 3.3 left), which was a result of a Ministry of Education Commissioned research project (Lin, 2016, 2017). The framework is then used as an umbrella concept in the National Curriculum Reform, resulting in Geography

Curriculum Standards proposing four geographical core competencies (Figure 3.3 right). Figure 3.3 provides both frameworks in Chinese with English translations.

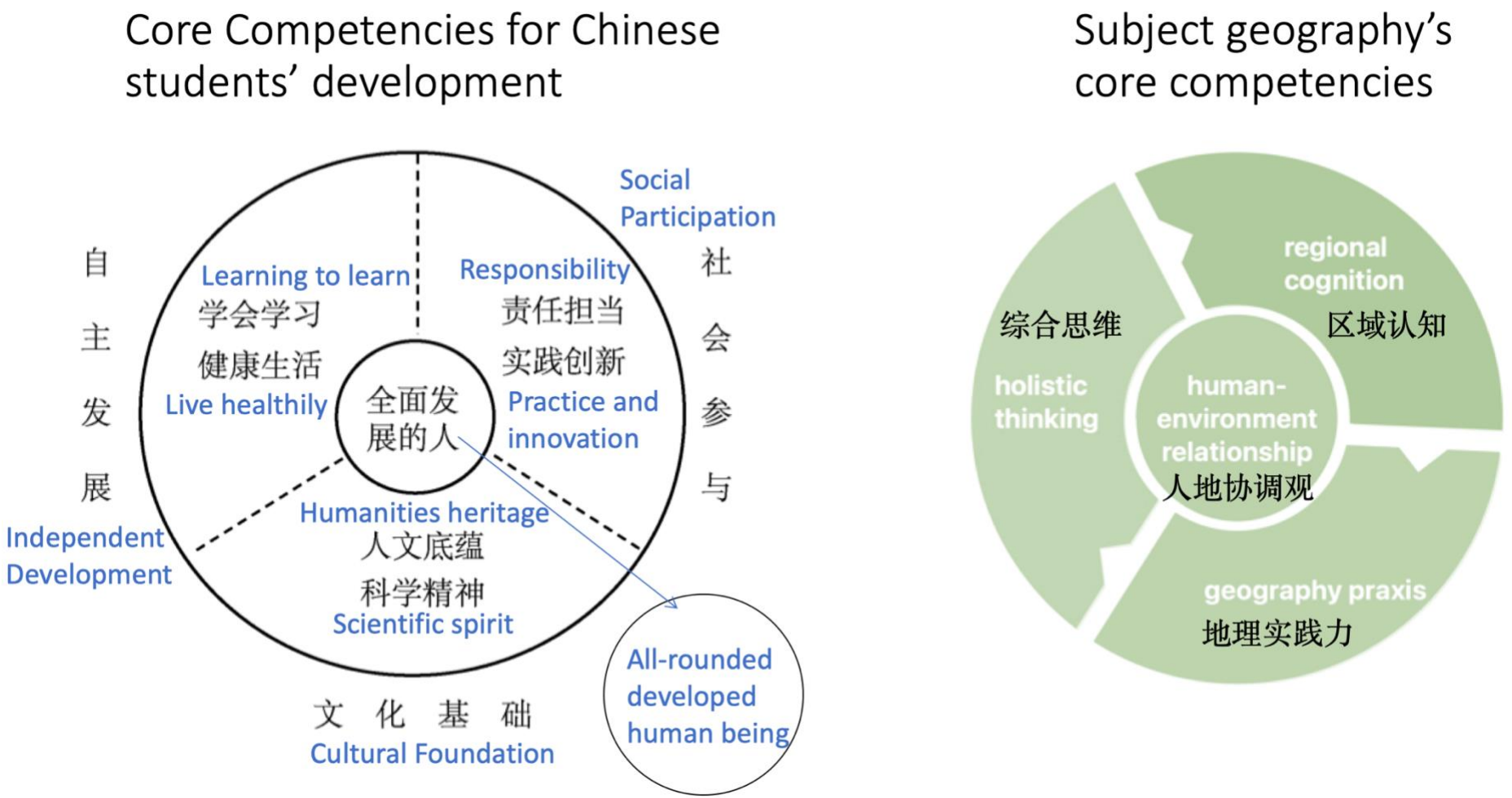


Figure 3.3 Core Competencies for Chinese students' development and geography's contribution[16]

[16] The English translation of the core competencies for Chinese students' development is mine. The English model and translation of the Geography come from Yushan Duan , who is one of the experts who compiled the Chinese National Curriculum Standards for Upper Secondary School Geography (MoE, 2017). Accessed from his 2022 conference presentation titled as: The Compilation of Geography Textbooks in Secondary Schools in Shanghai, China: From the Perspective of Key Competence.

It is important to bear in mind that there are different versions of translations of hexin suyang (核心素养) into English. This research follows Lin's (2017) translation in the English abstract. Similarly, the English translations of geographical core competencies also have different versions. Figure 3.3 provides Duan (2022)'s translation from his English presentations, which is a direct translation based on the Chinese words. Table 3.7 provides a different version of translations as He, Tani and Yang (2022) translated the meaning of four geographical core competencies and provided descriptions to unpack what is embedded in short Chinese phrases.

Table 3.7 Core competencies in Chinese Geography Curriculum Standards (He *et al.*, 2022)

Core competency (p.130)	Descriptions (p.130)
Awareness of human-nature relations	students can understand the causal interaction between nature and human activities
Ability to think in a systematic approach	Students can consider the effect of the intertwined natural and human factors in the analysis of complex issues or landscapes in specific time and space and understand the processes of the changing landscapes;
Ability to analyse places in terms of characteristics, scale and connections	Students can identify the unique characteristics of places at different scales and the interconnections between places;
Ability to conduct geographic enquiries	Students can conduct geographical enquiries such as observation, fieldwork and experiments, and use geographic tools such as maps to collect relevant data in the analysis of geographical issues

These two different translations matter in this study. Duan's literal translation of "regional cognition" and "holistic thinking" clearly shows a connection to Chu (cited in Wu *et al*, 2000) and Fu (2017)'s summary of geography's characteristics: regionalism and comprehensiveness. The free translations from He *et al.* (2022) provide explanations to unpack the meanings embedded in short phrases, outlining four aspects that geography can contribute to students' core competencies. Putting them together makes core geographical competencies in the Chinese national geography curriculum became accessible in English.

Connecting Geography Competencies to Conceptions of Geography

The core competencies corresponded to the Walford (1996) category of geography conceptions. Walford (1996) asked 105 postgraduate students to provide their short definitions of 'geography'. These postgraduate students all graduated with geography degrees and joined a specialist geography teacher-training postgraduate programme, and they were asked this question at the beginning of the course. Walford (1996) classified four main conceptions of geography from their answers:

- **Spatialists** have a "scientific/objective tinge" (p.73) and see geography primarily as "spatial analysis" (p.73), studying spatial distributions and analyse spatial relations
- **Interactionists** view geography as a study highlighting "the linkages between physical and human environments" (p.76);
- **Synthesisers** adopt "a holistic approach" (p.75) to value geography's ability to "synthesise and be cross-disciplinary" (p.76);
- **Placeists** consider geography's primary focus is "the knowledge and character of individual places, regions and countries" (p.76)

The four conceptions were reflected in the core competencies, which valued geography's characteristics on human-environment interactions (in **interactionists**), regionalism (in **placeists**) and comprehensiveness (in **synthesisers**). The Walford (1996) category provided an alternative to classify geography, not through its historical traditions nor academic branches, but through what prospective teachers think geography is about. Interestingly, Walford (1996) did not specify in the question whether geography here refers to school geography or academic geography. It was more inclined to academic geography as Walford (1996) explained one of the reasons to do this was to know students' "view on the nature of studies" (p.69) after their recent completion of geography degrees. Although teachers in different contexts may produce different definitions from the Walford (1996) category, it is significant to recognise that student teachers could already have different personal definitions of geography before taking any teacher education courses.

Following Walford (1996), there are abundant texts written in English on teachers' conceptions of geography at primary phase (Martin, 2000; Catling, 2004, 2013; Puttick, Paramore and Gee, 2018), secondary phase (Brooks, 2007, 2016; Walshe, 2007)and trainee teachers in Turkey (Alkis, 2009), and Czech geography teachers (Knecht and Spurná, 2022).

Martin (2000) investigated the relationship between postgraduate primary education students' images of geography and their teaching styles, finding that novice teachers' pre-course images of geography had "little relationship" (p.223) to what they portrayed in teaching. According to Martin (2000), teachers' images of "geographical education (combining images of geography and teaching)" (p.242) would be more appropriate to the base to see teachers' actions. This research reminds teacher educators and teachers that there is a gap between studying geography as an academic discipline and teaching geography as a school subject. In my study, this gap is vital to investigate teachers' conceptions of geography as an academic discipline they learned at university and geography as a school subject they teach.

Catling (2004) adapted the Walford (1996) and Martin (2000) approaches to study primary school trainee teachers' pre-course perspectives of the term geography and their purpose of teaching geography to primary children. Catling (2004) identified a difference between geographical perspectives (geography as a study; p.153) and geographical purpose perspectives (geographical education; p.155) (see Table 3.8). Although Globalists and Earthists dominate the former perspective, only Globalists kept their place in the latter.

Table 3.8 Catling's sample of geographical perspectives and geographical purposes

Geographical perspectives (% of samples)	Geographical purpose perspectives (% of samples)
Globalists (36.2%)	Globalists (35.3%)
Earthists (30.3%)	Placeists (18.8%)
Interactionists (14.7%)	Environmentalists (12.8%)
Placeists (13.8%)	Interactionists (11.9%)
Environmentalist (4.1%)	Earthists (10.1%)
	Global personalists, Localists, Locationists (each 2.8%)
	Map-lovers (0.9%)
	No clear purpose (1.8%)

The Catling (2004) typology contributes to this study in two ways. First, separating geographical and geographical purpose perspectives can help identify teachers' conceptions of geography and geographical education, which are not necessarily the same. Second,

primary trainee teachers may not hold geography degrees but also have pre-course personal perspectives on geography and geography education. Although the typology is rooted in primary geography, it can still shed light on understanding secondary geography. The second point is to be conscious of teachers' diverse routes into teaching. My study investigates secondary geography teachers who entered teaching without initial teacher education. It does not mean they do not have perspectives on geography and geographical education.

Regarding the secondary phase study, Brooks (2007, 2016) focused on how expert teachers' subject knowledge influences them in their practice. Walshe (2007) investigated geography teachers' subject conceptualisation and connected teachers' understanding to their professional development, personal values, academic background, and experiences in the classroom with students. The existing secondary phase research in England shows that English geography teachers' subject knowledge and their subject conceptualisation are crucial in their practice and had links to their professional and personal life.

To the best of my current knowledge, no literature written in Chinese focused on identifying Chinese geography teachers' conceptions of school geography and academic geography yet. That is why this section reviewed the English scholars' efforts. The study on trainee teachers in Turkey (Alkis, 2009), and Czech geography teachers (Knecht and Spurná, 2022) also showed that some of the elements studied by English scholars can provide insight or a framework for understanding geography in different national contexts.

However, He, Tani and Yang (2022) explored the gap between academic geography and school geography in China and proposed a framework to engage knowledge transformation at institutional and classroom levels. This research is written in English. It addresses teachers' role in the curriculum. To sum up, English and Chinese teachers' conceptions of academic geography and school geography may not align, but they both have conceptions. These conceptions should not be assumed to be the same, and it would be interesting to investigate the similarities and differences between various conceptions. The gap exists between academic geography and school geography, and a gap also exists between teachers' images of academic geography and their images of school geography.

- In connection with the Stengel classification

I link back to the Stengel (1997) classification as it helps to discuss the potential diversity of teachers' geography conceptions. The distinction between academic geography (discipline) and school geography (subject) do not just exist in the literature and at a policy level, different teachers who teach school geography could have various conceptual distinctions between the two. The review of geography as a school subject shows that teachers may hold different views on the relationship between school geography and academic geography. Teachers' personal experience may influence some teachers to view school geography as "continuous" (Stengel, 1997, p. 593) to academic geography, but others may see the discipline-subject relationship as "different but related: school subject preceding" (Stengel, 1997, p. 595). Even within the "continuous" view, teachers may have different understandings of school geography and academic geography. Hence, for this study, it is important to listen to teachers' conceptions of academic geography and school geography, and possible relations between them, but also crucial to examine what their conceptions are.

3.2.4 Summary of Section 3.2

Previous parts of the literature showed that that Geography has walked a passage from a school subject to a university discipline. However, academic and school geography are still contested in educational policies and practices. Hence, it is important not to assume people mean the same thing when they use the word 'geography'. For example, Chinese academic geographers commonly view geography as a science discipline. Geography is also in the science category at Chinese universities. Meanwhile, the humanitarian inclination has changed the feature of geography discipline internationally. That is, geography is a discipline which bridges sciences and humanities.

Different conceptions of geography also appear across national curriculum standards and at the classroom level. At the policy level, some educational policies put geography as a separate Humanities subject (e.g. China and England), while other policies can put school geography with other subjects in social studies or environmental studies. Regarding practice, teachers have different images of school and academic geography, too. Teachers could also view the relationship between school geography and academic geography differently. In short, teachers' interpretations of geography could be various.

As promised, I share this research means by geography and geography curriculum here. In my study, academic geography is a discipline which has a tradition of bridging between humanities, social sciences and nature sciences; school geography is a subject that also can fit into different areas of study in schools across different jurisdictions. Although it is traditionally seen as a Humanities subject in China, the Humanities/ Science division does not fully reflect the non-binary feature of school geography. The "different but related: dialectic" (Stengel, 1997, p. 597) relationship best represents the complicated curricular relationship between academic geography and school geography. Regarding geography curriculum, it is expressed differently in national documents and may also have various interpretations from geography teachers. Hence, the geography curriculum in my research includes what curriculum standards write, and what teachers interpret as geography. This study considers the process of teachers interpreting geography as part of teachers' curriculum making. The following section conceptualises curriculum making.

3.3 Conceptualising curriculum making

The first appearance of curriculum making as a concept was in Bobbitt (1918). Section 3.1 reviewed Bobbitt's definition of curriculum, which was a device for creating the kind of adults to meet societal needs. As for curriculum making, Bobbitt (1918) envisioned "a scientific method in curriculum making" (p.41). My study did not imagine applying Bobbitt's scientific technique to the curriculum. I got inspirations from Clandinin and Connelly (1992)'s theorisation of "Teacher as Curriculum Maker" (p.363). To Clandinin and Connelly (1992), the Bobbitt view of curriculum-making considered teachers more as "the conduit" (p.364), and they preferred "a Deweyan view of the curriculum from a teacher's vantage point" (p.365). In this section, I reviewed the evolving journey of what curriculum making means, outlined school teachers' role in this evolution, and summarised a working definition of curriculum making.

3.3.1 What does curriculum making mean?

Clandinin and Connelly (1992) traced the idea of curriculum making to map out its evolving definitions, tracing back to Tyler and Schwab as two key contributors. Clandinin and Connelly (1992) were aware that Tyler was a key figure "in the notion of teachers as curriculum implementors" (p.366), but they considered this was half the story, as Tyler also recognised the significance of teachers' roles:

> The teacher can provide an educational experience through setting up an environment and structuring the situation so as to stimulate the desired type of action (p.64, as cited in Clandinin and Connelly, 1992, p.366)

Clandinin and Connelly (1992) noticed that it was Tyler's view on "curriculum as ends and instructions as means" (p.366), resulting in Tyler putting teachers' crucial roles in instruction. They noted that Schwab 'misread' Tyler to advance four commonplaces of curriculum: "teachers, student, subject matter and milieu" (p.366) and put the teacher as "the agent of curriculum with a set of commonplaces". Schwab (1973) referred the milieus as the community where children's learning takes place, hence including "the school and classroom in which learning and teaching are supposed to occur" (p.503) as well as "the family, the community, the particular groupings of religious, class, or ethnic genus" (p. 503). According to Clandinin and Connelly (1992):

> Schwab provided the rationale, which was a kind of reinterpretation of Tyler, and Tyler provided the agency. In this view the teacher is a maker of only half a curriculum loaf, the half that often goes by the name of means. (p.366)

In other words, scholars' definitions of curriculum have a consequent impact on their view on teachers' roles. Tyler separated curriculum as ends and instruction as means, resulting in him recognising teachers' significance in the instruction (as means) rather than in the curriculum. However, Clandinin and Connelly (1992) ignored Tyler's means-end distinction and reframed the arguments:

> as a curriculum text, all that has been said about experience and the teacher's role in selecting and planning student experience becomes curriculum activity. By implication, then, the teacher becomes a curriculum maker rather than a curriculum transmitter or implementor. (p.366)

Clandinin and Connelly (1992) bridged Tyler and Schwab together to re-interpret the idea of "Teacher as Curriculum Maker" (p.363). They intentionally blurred the boundaries between curriculum and instruction. They (1992) considered school reforms were related to curriculum (course of study) and teachers:

> … curriculum has been seen as an instrument of school reform and teachers as mediators between the curriculum and intended outcomes… (p.367)

Clandinin and Connelly (1992) also suggested seeing curriculum as a course of life, which meant teachers would not act as means to implement curriculum thinkers' ends. By doing so, they considered teachers as people, people who would make stories in their experiences when they shaped the course of study in the classroom as part of their life. The focus on "stories of teachers" (ibid, p.378) freed a view of teachers from being framed in the conduit metaphor. Clandinin and Connelly (1992) reconstructed teachers' images as curriculum makers by "reconceptualizing teachers as researchers" (p.384), and suggesting a collaborative story between curriculum researchers and classroom teachers:

> In our work as curriculum professors, we propose a new agenda based on a new metaphor — the teacher as curriculum maker. Not only should we listen closely to teachers and to the stories they live out in their classrooms, but also we need to learn to tell our own stories as we live them out in our work with teachers in their classrooms. Our work then becomes learning to tell and live a new, mutually constructed account of teachers as curriculum makers. (p.393)

Similarly, Doyle (1992) also suggested "teaching as a curriculum process" (p.72) by considering curriculum at two levels: the institutional level and the classroom level. Doyle (1992) identified teachers' critical role in constructing the curriculum at the classroom level:

> Teachers are curriculum makers who guide students through the texts, shape the interpretations that are allowed on the floor, and, importantly, define the tasks that students are to accomplish with respect to these texts… (p.76)
>
> This conceptualization of teaching as a curriculum process suggests that teachers and students have powerful theories of the content that shape classroom plans, choices, and outcomes in fundamental ways. To understand effective teaching, then, it is necessary to understand these curriculum theories and how they operate. Clearly, effectiveness in teaching is not a mechanical process of using the correct behaviors but rather a matter of interpretation and choice. (p.76-77)

The work of Doyle (1992), as well as Clandinin and Connelly (1992), expressed curriculum scholars' awareness of teaching and stated teachers' roles in teaching. As curriculum was seen as an experience for students and teachers to live with, teaching was part of the curriculum. Deng (2012) developed Doyle's work and proposed that curriculum making operates "across three distinct domains" (p.36) in the Chinese curriculum reform, which took place at the beginning of the 21st century (see Table 3.9).

Table 3.9 A summary of Deng (2012)'s three domains of curriculum making

Curriculum Making domains (p.36)	Curriculum making centres on… (p.36)
The policy or institutional domain	Policies and discourses at the intersection between schooling, culture, and society.
The programmatic domain	Translating the aims, ideals, and expectations at the policy level into an operational framework
The classroom domain	The pedagogical interpretation of the programmatic curriculum by a teacher

Although Deng (2012) considered curriculum making operates across three domains, he interchangeably used three domains (policy, programmatic, and classroom) and four levels (national, local, school and classroom) in his writing to show:

> The national, local and school curriculum making operate across the policy and programmatic domains, and in classroom, teachers need to be viewed as curriculum makers in implementing the new curriculum. (p.36)

In the same article, Deng (2012) also wrote:

> In the new curriculum reform teachers are construed as not passive curriculum implementers *but* active curriculum makers. (p. 39, emph. original)

At first glance, implementing and making are two roles in conflict. However, this conflict is crucial to understand that teachers are expected to make the curriculum in their classroom, but the curriculum has also been made in the policy and programmatic domain, which means teachers are also expected to implement policy makers' ideas on curriculum. Classroom teachers are not usually involved in planning curriculum standards or compiling textbooks, which are both given to teachers as curriculum and teaching materials. That is, teachers as curriculum makers still live in a curriculum making hierarchy emphasising implementation. Expecting "active curriculum makers" means expecting teachers to enact the curriculum at the classroom level to align with the official curriculum ideas at the programmatic level.

Another development of curriculum making at different levels is the Thijs and van den Akker (2009) typology from high levels to low levels: supra (international), macro (system,

national), meso (school, institute), micro (classroom, teacher) and nano (pupil, individual). The typology makes hierarchies of levels evident. Teachers are considered actors at lower levels whose teaching plans and materials are influenced by school programmes and examination programmes.

To put it in another way, curriculum making could be seen as re-theorised to free teachers from the conduit metaphor, but it still could be a way to 'actively' implement the curriculum. Is there a way to address curriculum making by challenging a mindset of hierarchical levels?

3.3.2 Curriculum making: From hierarchical levels to complex webs

If we categorise curriculum making by levels, it indicates up-down hierarchies, and levels also limit a way to understand the dynamics in curriculum making across different sites. To fully reflect on the emerging complexities when curriculum is made and how social actors are involved in such makings, Priestley and Philippou (2018) suggested viewing "curriculum making as social practice: complex webs of enactment" (p.151), theorising curriculum making as:

> occurring across multiple sites, in interaction and intersection with one another, in often unpredictable and context-specific ways, producing unique social practices, in constant and complex interplay, wherein power flows in non-linear ways, thus blurring boundaries between these multiple sites. (p.154)

Rather than categorising levels, Alvunger, Soini, Philippou and Priestley (2021) produce a heuristic schematisation (Figure 3.4) to reflect interactions and dynamic flows across different sites of curriculum making, presenting the intertwined relationship among sites, actors and activities. Figure 3.4 matters to this study for visually showing that curriculum making processes are complicated systems with multi-directions and inter-influences. Although my study only intends to investigate teachers, being aware of teachers as part of the curriculum making webs rather than classroom level actors is crucial. Noticing other actors and sites of curriculum making is helpful to investigate teachers who may cross boundaries at their work and interact with other actors at different sites. Even when teachers are not actively engaging with other actors on the web, this model helps to see what is absent. It is also a helpful lens for understanding teachers and their curriculum making. The curriculum making web (Figure 3.4) will come back later in data analysis chapter (Chapter 7 p.171).

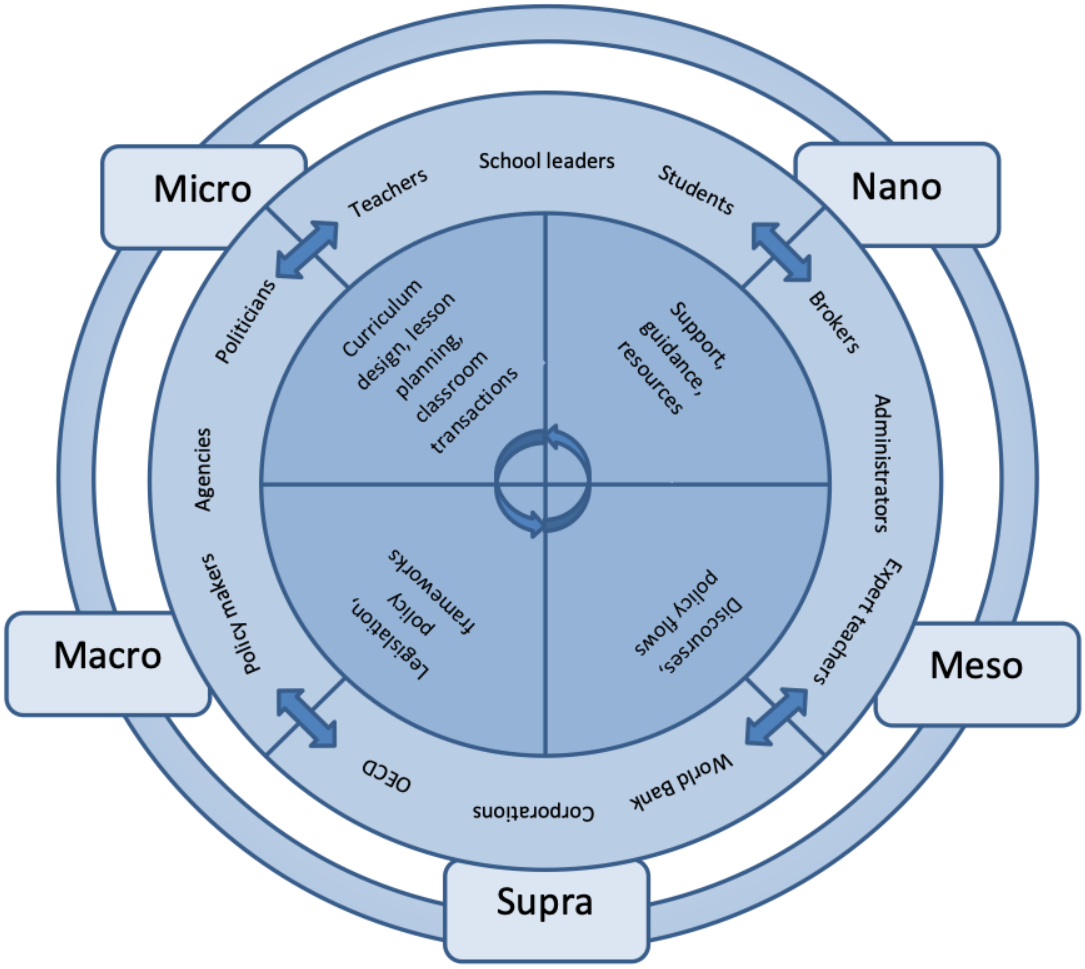


Figure 3.4 Curriculum Making with sites, actors and activities (Alvunger *et al.*, 2021, p. 275)

3.3.3 Summary of Section 3.3

Overall, conceptualising curriculum making marks a journey from teachers as implementors to teachers as collaborative makers of curriculum stories. The hierarchical levels of curriculum making also get gradually replaced by a diagram highlighting the dynamics and multi-directions in curriculum making across different sites, activities and actors.

3.4 Geography Curriculum Making Models: teachers' roles as curriculum makers

This section introduces the development of curriculum making models in school geography, highlighting teachers' role in the curriculum and reviewing literature related to it. It traces the journey of how curriculum making in school geography was born and became a popular research topic in the field of geography education internationally. By involving different

research critiquing and developing curriculum making, the section concludes with a summary of the existing curriculum making framework's potential and limits to my study.

3.4.1 The rise of a Geography Curriculum Making Model

In 2009, Geographical Association (2009) introduced curriculum making in its Manifesto:

> The GA believes that teachers should be accountable, but also that they are autonomous professional driven by educational goals and purposes: that is, they are the curriculum makers and the subject leaders.
>
> When teachers with a passion for their subject are inspired by a clear sense of the subject's educational benefits they can devise surprising, challenging, engaging and 'living' geography with their students. This is what we mean by 'curriculum making' – teachers balancing the three sources of energy in the classroom:
>
> - the teacher's own practical skills and expertise
> - the interests and needs of the students
> - what the dynamic, changing subject discipline has to offer. (p.27)

Call for geography teachers' curriculum making

David Lambert, by then the Geographical Association Chief Executive (2002-2012), had written about teachers' role in curriculum making even earlier:

> Sustained engagement with the dynamics of students' learning uniquely guides the way that existing subject knowledge has to be reconfigured locally if it is to be taught successfully in schools. Thus, what teachers know about their subject has to be reworked on site, and such is teachers' agency that they will always have a key role in shaping curriculum subjects. In this sense, teachers are learners too. They are key players in curriculum development, or 'curriculum making'. (Lambert, 2005, p. 3)

Lambert also wrote about teachers' agentic role in making the curriculum in a preface to the *Teaching School Subjects 11-19* series by stating the series' mission with John Hardcastle:

> If it has a single, clear mission, it is to encourage the thought in teachers that they do not merely 'deliver' the curriculum in the form of prefigured subject knowledge, but they have an agentive role in making it. (Hardcastle and Lambert, 2005, pp. ix–x)

In this series, Morgan and Lambert (2005) co-authored a book on geography, demonstrating that "teachers' choices" (p.74) are important "in constructing the curriculum" (p.74). At this time, Morgan and Lambert (2005) viewed geographical knowledge as "socially constructed" (p.97) and "cannot be regarded as neutral" (p.97), hence teachers are crucial for students:

> *it is the teachers' understanding of conceptual categories drawn from the discipline that is crucial to the type of geographical learning that might result from this activity. (p.100, emph. original)*

The above quotes show that Lambert already started to mention teachers and curriculum making in his early writings in 2005. Although he interchangeably used agency, choices, and understandings, Lambert consistently valued the role of teacher's agency in curriculum making. In 2015, when Lambert led the *GeoCapabilities II project (2013-2017): Teachers as Curriculum Leaders*, he explained "curriculum making" as:

> Because what we want to do was work on the idea that teacher really does have an agency in their classroom. And when all the shouting is finished, that's what curriculum making say. It's saying: it's your classroom, these are your kids, and you make it happen for them. (*David Lambert introduces 'curriculum making'*, 2015)

It is important to notice that Lambert introduced curriculum making into school geography **for** teacher education and professional development. [17] Lambert's focus has always been teachers' curriculum making, highlighting the role of teachers' agency. Although Lambert did not provide his definition of teacher agency, it is fair to say that Lambert noticed the relationship between teacher agency and curriculum making.

A brief summary of GeoCapabilities[18]

I have mentioned GeoCapabilities project from the introduction, and acknowledge its influence on my starting point of this study. Here I briefly summarise the main elements of GeoCapabilities: the capabilities approach, powerful disciplinary knowledge, three futures and teachers as curriculum makers. The capabilities approaches in the GeoCapabilities project got inspirations from Amartya Sen's capability theory. Sen (1993) picked the

[17] Other scholars specialising in geography education also write about curriculum making. For example, Biddulph (2011, 2017) has a focus on students' curriculum agency and students' voices. More in Section 3.4.3.
[18] See more in the GeoCapabilities Phase 2 website: https://www.geocapabilities.org/training-materials/module-1-the-capabilities-approach/aims/

expression to “represent the alternative combinations of things a person is able to do or be-the various ‘functionings’ he or she can achieve” (p.30). Geo-capabilities represent geography education’s contribution to a person’s achievement of capabilities. Lambert, Tani and Solem (2015) stress that powerful disciplinary knowledge as a key principle underpinning the geo-capabilities approach. Powerful disciplinary knowledge (PDK) is a development from Michael Young’s notion of powerful knowledge (discussed earlier in section 3.1.2, page. 31). PDK stands for specialised knowledge which is usually derived from an academic discipline. The GeoCapabilities project connects PDK and Capabilities in a Future 3 curriculum (see more on Three Futures in Table 3.1), where teachers are curriculum makers. In the following paragraphs, I will say more about curriculum making developed from the GeoCapabilities project.

Developing the Geography Curriculum Making Model with GeoCapabilities

Lambert’s second co-authored book with John Morgan (2010) put curriculum making into three pillars (Figure 3.5), viewing “student experiences, teaching/pedagogy, geography: the subject” (p.50) as:

> three competing zones of influence on the teacher as she grapples with the ‘in-between’ work of translating a curriculum plan, which may scope out several years’ work in geography (and is presumably driven by some broad aims or goals), into lesson sequences. The purpose of curriculum-making is to show an internal coherence representing something more than simply an accumulation of short-term objectives. It is also to hold in balance the *various* influences that might be brought to bear. The three zones of influence in the figure may also be thought of as sources of energy that feed educational encounters in schools. (pp.49-50; emph. original)

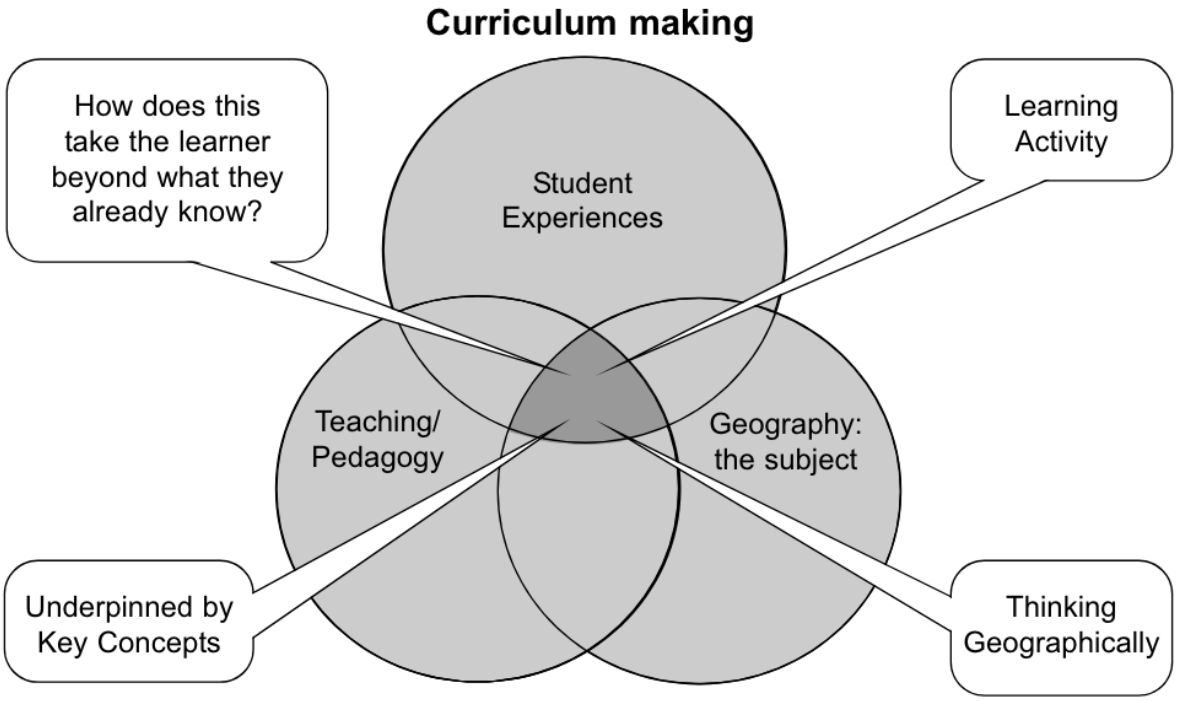


Figure 3.5 The three pillars of curriculum-making (Lambert and Morgan, 2010, p.50)

Lambert and Morgan (2010) consider the three pillars as resources for curriculum making, and view teachers as the person to keep these three zones of influence in balance:

- "The young people themselves bring curiosities, ingenuity and often individual interests that teachers may choose to find out about and use" (p.50) and they bring their different ways to experience the world;
- "Teachers have a range of knowledge, skills and understanding on which to build a teaching repertoire" (p.50)
- "The subject matter is the key resource that students and teachers use" (p.51) and the subject discipline are significant resources

Unpacking what Lambert and Morgan (2010) mean by "student experiences, teaching/ pedagogy, geography: the subject" (p.50) is helpful to understand the key elements in their curriculum making model (Figure 3.5). Figure 3.5 resonates with four curriculum commonplaces: teacher, learner, subject matter and milieus (Schwab, 1973). The milieus are not directly mentioned by Lambert and Morgan (2010); their emphasis on a teacher "grapples with" (p.49) the curriculum indicates the default milieus might be schools and classrooms. That is to say, relevant other milieus like family, the community of the same ethnicity, and the particular groupings of class genus may not be taken into consideration in this scenario.

Lambert further developed the curriculum making model (Figure 3.5) with colleagues in England (Lambert and Biddulph, 2015), America and Finland (Lambert, Solem and Tani, 2015), adding one overarching circle of geography discipline which contains teacher choices, school geography and student experiences (Figure 3.6).

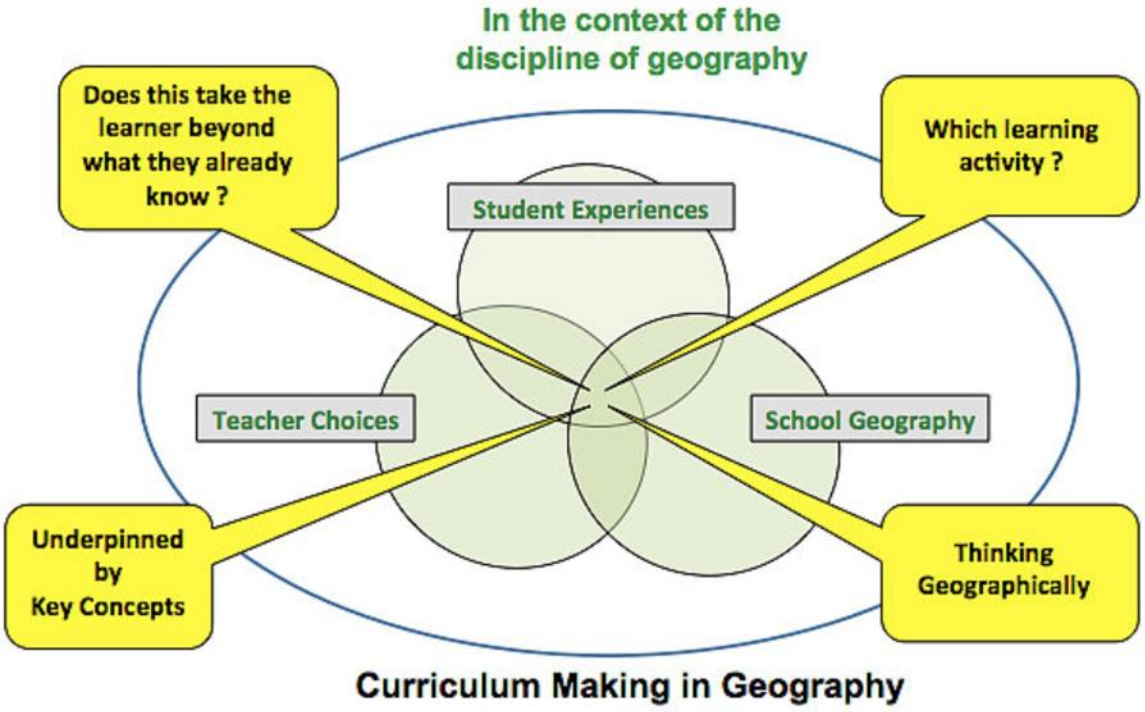


Figure 3.6 The Curriculum Making Model in *GeoCapabilities* II project

Regarding the disciplinary knowledge's connection to the capabilities approach, Lambert, Solem, and Tani (2015) considered that geo-capabilities helped to connect:

> a progressive form of discipline-oriented teaching to the context of broad educational aims. It does this through the dialogic space offered by curriculum making. (p.726)

GeoCapabilities are geography's educational contribution to achieving human potential, echoing the Bildung-Didaktik tradition. According to Lambert, Solem, and Tani (2015), the *GeoCapabilities* project aspires to acknowledge geography "as powerful disciplinary knowledge" (p.735) and leads toward a Future 3 curriculum. The powerful disciplinary knowledge (PDK) derives from social realists' concept of powerful knowledge (see section 3.1.2), as does the Future 3 curriculum (Young and Muller, 2010). Deng (2020) commented that geo-capabilities went beyond social realism by viewing "the development of geocapabilities as a result of possessing powerful disciplinary knowledge" (p.89) as the "the

central purpose of geography education" (p.89). For my study, it is important to know that Lambert's development of curriculum making has connections with social realists, but also goes beyond social realists (i.e. in the way Deng discussed). One possible reason could be that Lambert always bears in mind wider educational aims about achieving human potential.

Translating curriculum making into subject didactics

Curriculum making as a critical concept in *GeoCapabilities* (an international project) is difficult to translate into other contexts (Uhlenwinkel *et al.*, 2017). According to Bladh (2020), one of the reasons is that curriculum is a strongly cultural-bound concept. However, there is still an opportunity for dialogue. Bladh (2020) noticed that the didactic triad (Figure 3.7) in Nordic-continental context mirrors the basis of the Lambert curriculum making model, especially the relationship of teacher-student-subject described as a Venn diagram.

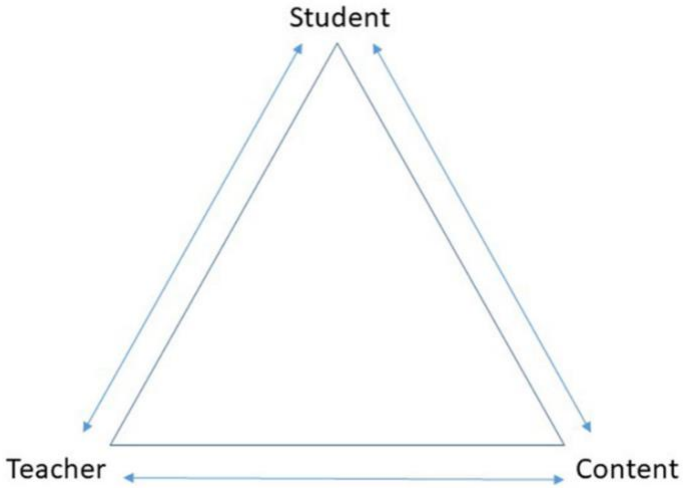


Figure 3.7 The didactic triad by Bladh (2020, p.208)

Mentioning the *Didaktik* tradition here helps to point out that teachers, students, and subject content (matter) are "at the heart of educational practice" (Bladh, 2020, p. 209). Teachers are actively involved in "a reflective process of transformation and/ or recontextualization of knowledge" (Bladh, 2020, p. 209) and take students in mind during the process. According to Bladh (2020), what makes powerful knowledge powerful in education comes from "how it gives new perspectives, understandings and new capabilities to young people" (p.213). That is, the didactic triad and curriculum making consider education as the end, not the discipline.

Summary of Section 3.4.1

Considering Lambert's foundational contribution to the curriculum making model in school geography, this research thereafter refers to it as the Lambert model. Despite the name after Lambert (mainly based in England), developing the curriculum making model in an international project called GeoCapabilities means that both the social realists (section 3.1.2) and *Bildung-Didaktik* tradition of curriculum conceptions (see Section 3.1.3) also had dialogues with Lambert in developing the curriculum making model. As the Lambert model did not address the milieu evidently, it has brought critiques and further development, which is the focus of next section.

3.4.2 Aspirations and realities: Geography Curriculum Making Models

The Lambert model has faced critiques about being idealistic for not addressing the constraints teachers face in the classroom. According to Mitchell (2016), there is an invisible tension in England:

> between the teacher's agency to "make" a curriculum and a controlling social-economic climate of accountability, performance pressure and technological change which limits the teacher's agency. (p.121)

According to Mitchell (2016), a tension exists between "the autonomous teacher as 'curriculum makers' and the curriculum control of wider society and economy" (p.121). Mitchell seems to narrow down teachers' agency as making the curriculum through "actively resisting the pressure of performativity and accountability by asserting their *identities* as geography teachers" (p.121, *emphasis original*). Later on, Mitchell (2017) contextualised Lambert and Morgan's (2010) Venn diagram of student experiences, teacher choices and geography subject "within a wider societal context (late capitalism)" (Mitchell, 2017, p. 306). Figure 3.8 shows Mitchell's development of Lambert's work.

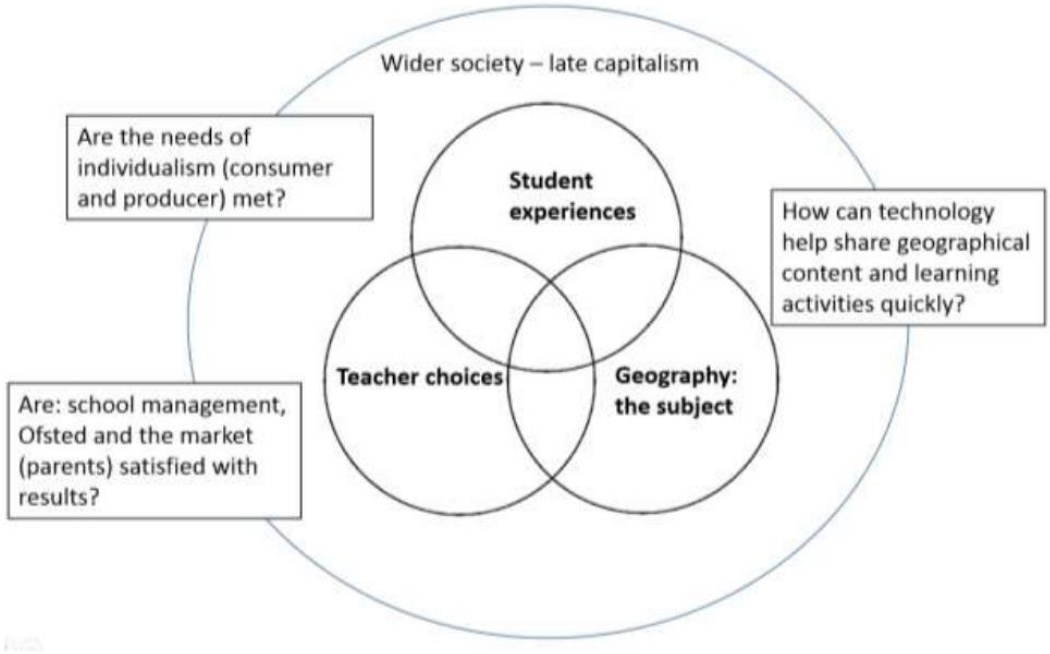


Figure 3.8 Curriculum making model in late-capitalism context (Mitchell, 2017, p.306)

Mitchell (2017) deliberately omitted the Lambert models' thought bubbles (Figure 3.5 and Figure 3.6) and replaced them with three questions in relation to the late-capitalism context:

- How can technology help share geographical content and learning activities quickly?
- Are: school management, Ofsted[19] and the market (parents) satisfied with results?
- Are the needs of individualism (consumer and producer) met? (ibid, p.306)

By doing so, Mitchell (2017) highlighted the milieus (Schwab, 1973) in the curriculum making process. According to Mitchell (2017), teachers responded to societal influences over curriculum making in "hyper-socialised curriculum enactment" (p.307), reflecting "a curriculum/ society dialectic" (p.308). That is, the "teacher choices" in the Lambert model became obscured as intensified collaborations between teachers in and beyond geography department 'socialise' the curriculum making process. The socialised way was different from the singular 'teacher choice' in the Lambert model, as the Lambert model seemed to suggest that an individual teacher had time and space to make their choice with their agency. Mitchell (2020) suggested putting both curriculum making models (his hyper-socialised one and Lambert and Morgan's aspirational one) for teacher education and professional development as conceptual tools for teachers to recognise and adjust their agency and societal pressures.

[19] Ofsted is short for Office for Standards in Education. It is a government body set up in 1993 to inspect and assess the educational standards of schools and colleges in England and Wales.

In a nutshell, Mitchell challenged the Lambert and Morgan model for not locating curriculum making in "historical (social, economic and political) contexts" (Mitchell, 2017, p. 310). His work brought the societal context in late capitalist times into curriculum making, which reminded this study to design the research with an awareness of the Chinese context. It is necessary to be aware that both Lambert and Mitchell proposes their curriculum ideas with a history of geography teacher-led curriculum development in English schools (Mitchell and Lambert, 2015; Mitchell, 2017). Mitchell's observation of school teachers under pressure to perform in a system is not a specific situation in England.

What Mitchell notices has a potential to apply in other national contexts. Chinese geography teachers may not all live in the late capitalism context as English geography teachers, but the pressure to perform in a system shaped by wider society also exists. Mitchell (2020) outlined that teachers in the late-capitalism faced 'performativity' increase, consequential managerial and bureaucratic control, such as "statutory National Curriculum, accountability arrangements and teacher training" (p.12). Later, in Chapter 9, I will discuss the similarities and differences between Shanghai geography teachers and English teachers.

To put it in another way, Mitchell did not just challenge the Lambert model, but appealed to see 'aspiration' and 'reality' side by side. Mitchell developed the Lambert model. That is, while recognising the social contexts (or in Schwab's term, milieu) in which teachers work and the associated pressures, teachers may also aspire to achieve something beyond what the system requires them to do. Hence, 'teacher choice' is also still in the Mitchell model.

Another contribution of Mitchell's work is to notice that schools in the hyper-socialised environment may serve the interests of late-stage capitalism, such as economic interests. The Lambert model may not address the societal context evidently, but it also makes Lambert's argument clear that geography curriculum making does not need to be attentive to what is expected by the wider society. In Lambert's own words:

> My argument has always been that schools - including geography classrooms - do not need just to serve economic interests. They should offer something broader and more critical. This is why teachers as curriculum makers need to have a sound, clear sense of educational purposes - this is what GeoCap insisted on. (Lambert's comment when reading an earlier version of my thesis draft on 21-03-2023)

Lambert's comment was consistent to the "garden of peace" metaphor Lambert (2013a) took from Wadley (2008). Wadley (2008) characterises that neoliberal lifestyle has made a "Vibrant City" (p.651) and suggests geography could be a "Garden of Peace" (p.651) which provides a sanctuary from the "managerial workplace and the Vibrant City" (p.651). Lambert (2013a) takes a further step to argue that geography as a school subject also has this calm space potential:

> I take this to refer to the role that education can play when conducted in a spirit of moral seriousness to distance us, from an hour or a day at a time, from the noise and just-in-time urgency of the neoliberal 'vibrant city'. (p.88)

Although having a peaceful sanctuary may be a luxury for school teachers, they are associated with societal pressures every day. The Mitchell model addresses more of teachers' societal context. However, it is important to have both aspirations and realities represented in geography curriculum making models. For this study, the Lambert model provides essential elements to discuss the interactions between teachers and other elements in curriculum making, the Mitchell model reminds the hidden societal contexts which also have a say in shaping teachers' curriculum making process. Both models require close look at the relationships between and among teachers, students and school geography (subject).

Morgan and Lambert (2023) also have started to address the milieu evidently, particularly on race and racism to move "towards racially literate curriculum" (p.166) by stating:

> The geography we teach in school is a vital component of how we grow to understand plurality in a diverse and respectful society. This requires critical open and dynamic engagement not only with geographical knowledge but also how we come to know it. (p. 175)

The quote above matters for this study to understand what drives Lambert to bring curriculum making into school geography and develop the curriculum making model. The milieu in which Lambert locates a 'powerful knowledge' centred geography curriculum is the world every person on the planet lives in. It is true that not everyone lives in the same context, and Lambert mainly works with school geography in England. However, the advocacy of Future 3 curriculum making concerns curriculum questions across contexts:

- What do teachers (choose/ have to) teach?

- Why do teachers (choose/ have to) teach in particular ways?

3.4.3 Different framings to Geography Curriculum Making models

As I mentioned before, other scholars provided different framings of curriculum making and critiqued the social realism reliance on powerful knowledge. Here I introduce what Roberts (2014) and Biddulph (2011, 2017) bring in. Roberts (2014) challenges the divide between powerful disciplinary knowledge and everyday knowledge. As prioritising knowledge from academic disciplinary communities may result in transmitting disciplinary knowledge to students, which is not how students make sense of geographical knowledge. Roberts (2014) suggested more attention should be given to pedagogies to make knowledge "accessible and meaningful for all students" (p.205). Biddulph (2011, 2017) articulated the significance of bringing young people's geographies to curriculum making, resonating with Roberts' work on calling for inclusive pedagogic practice. They both highlight young people's geographies, which is distinct from the Lambert model and social realism.

On the one hand, Lambert also noticed young people's contribution by recognising student experiences as one of the three pillars in the curriculum making model. On the other hand, Roberts (2014) and Biddulph (2011, 2017) put the spotlight on young people while Lambert's idea is associated with social realism, which did ignore young people's voices and everyday knowledge in its early development. In this study, I am aware of different framings to geography curriculum making, and conscious of the potential to ignore students' voices and everyday knowledge by applying the Lambert model. Hence, I unpacked the Lambert model into different elements and invited teachers to frame their perspectives and priorities.

3.4.4 Summary of Section 3.4

The development of geography curriculum making models addressed the above two questions by revealing a tension between:

- expectations for teachers to balance their **choices**, the subject and student experiences
- what teachers **have to** do as they work in certain contexts, such as late-capitalism

Lambert developed a curriculum making model in geography education research for teacher education and professional development, encouraging teachers to take professional ownership of the curriculum. In the *GeoCapabilities* project, the curriculum making model

was used to suggest that teachers could choose to make geographical knowledge in the curriculum for students with wider educational aims, especially through the capabilities approach. This is only part of the story, as it does not address the social structures that limit teachers' choices. Mitchell's critiques and modifications present how late-capitalism context can limit teachers' choices in curriculum making. However, it does not diminish the insights of the Lambert model to suggest teachers, students and subject geography as same-size pillars in curriculum making. In this research, like Mitchell, I will be more careful about these three pillars all take place within specific contexts. I am curious to know how classroom teachers see themselves in curriculum making, and to what extent teachers' visualisations of their role in making the curriculum aligns with the Lambert model. In the Lambert model, agency is implied but not developed explicitly. Mitchell's work also used agency but did not specify the meaning of agency. I see that there is a need to look at the meaning of teacher agency, along with the theories of curriculum making from curriculum scholars. Hence, the next chapter explores the concept of teacher agency and how I work with the idea of agency in designing my research.

3.5 Summary of Chapter 3

Overall, the abundant literature on curriculum concepts, geography curriculum, curriculum making and geography curriculum making have presented the two debates well. Geography went through similar pathways as a school subject and academic discipline in England and China. Teachers had a significant role in promoting geography's status. Geography's connections with other disciplines enable it to have a 'bridging' role with physical sciences, social sciences and humanities. However, the science orientation and humanities inclination do not sit together happily, hence a double-category of school geography as a humanities subject (still aspires to be **also** a science subject) and academic geography as a scientific discipline.

The second debate on the role of teachers and pupils in making the curriculum has been considered in both curriculum making commonplaces (Schwab, 1973) and geography curriculum making models (Lambert and Morgan, 2010; Mitchell, 2017). However, the review suggests that teacher agency sits at the intersection between theories of curriculum making and the geography curriculum making model, but that teacher agency as it relates to geography teachers' curriculum-making specifically has not been well explored.

4 A Theoretical Framework: Teacher Agency

This chapter clarifies the links between teacher agency and curriculum making. To do that, I first have to review what I mean by agency, how agency is theorised in relation to teachers and curriculum, and ends with an overview of the specific approach I use in this study and how I use it to connect teacher agency and curriculum making. The previous chapter has shown that any conception of teachers as curriculum makers requires a concept of agency (Clandinin and Connelly, 1992). If teachers are to be curriculum makers, they must have the freedom to think and the capacity to act (Lambert and Morgan, 2010; Lambert and Biddulph, 2015; Lambert, Solem and Tani, 2015). Mitchell (2017) says that structures like examinations and accountability can constrain teacher choices; hence, school teachers in classrooms do not have the freedom suggested by the Lambert model. This is why agency is vital in curriculum making. In my study, I tend to consider teacher agency not as boundless freedom but as an individual's potential to act (or choose not to act) within different structural environments.

Scholars have contributed various definitions of agency, such as different perspectives from philosophy (Ferrero, 2022), psychology (Moore, 2016), sociology (Emirbayer and Mische, 1998). According to Ferrero (2022), the simple definition of agency as the capability to act lacks nuance. In response, he offered four basic pictures of agency as: creation, self-constitution, psychological causality and reason responsiveness. However, although these sketches add nuance, they do not depart meaningfully from the view that agency is a capacity that an individual 'has'. From a psychological perspective, Moore (2016) sees agency as "a feeling of control over actions and their consequences" (p.1). Neither of them considered the societal context that a human lives in. In contrast to these two perspectives, Emirbayer and Mische (1998) conceptualise agency "as a temporally embedded process of social engagement" (p.962). They took social actors and their structural contexts into consideration. Biesta and Tedder (2007) take the Emirbayer and Mische (1998) concept of agency further towards an ecological perspective, seeing agency as:

> a 'quality' of the *engagement* of actors with temporal-relational contexts-for-action (p.146; emphasis original)

Biesta and Tedder (2007) recognise that understanding the achievement of agency requires "an understanding of the ecological conditions under and through which agency is achieved" (p.146). Priestley, Biesta and Robinson (2015) further develop an ecological approach to

understanding teacher agency. This study adopts their ecological view of teacher agency to investigate the role of agency in curriculum making.

4.1 Theorising agency from sociological to ecological approaches

This section starts with an overview of different sociological approaches to theorising agency, then explains why the Emirbayer and Mische (1998) analytical category of agency is insightful to develop a specific ecological approach in theorising agency, which is chosen by this study to analyse teacher agency in curriculum making.

The structure versus agency debate has a long history in sociology. Parker (2000) identified two kinds of sociologists who tried to reconcile the two: structurationist and post-structurationist. Parker suggested Anthony Giddens and Pierre Bourdieu as prominent structurationists, both stressing that structure and agency are important, and seeing that structure partially resides *within* human individuals. Among the post-structurationists, Parker highlighted Nicos Mouzelis and Margaret Archer. Although they also stress the importance of both structure and agency, they insist on an analytical distinction: the structure exists *outside* individuals. Archer (1996) critiqued the structurationists' view on merging structure and agency as "central conflation" (p. 72). Her way to reject this conflation is to acknowledge that they are intimately intertwined but also analytically distinct. Archer's contribution of analytical separation on structure and agency is insightful for this study. When an agency can be separated from structure, agency can be discussed as a possible analytical category itself.

So, how can agency be an analytical category? Emirbayer and Mische (1998) disaggregated agency into three temporal dimensions, conceptualising agency as "an analytical category in its own right" (p.963), defining human agency as:

> the temporally constructed engagement by actors of different structural environments — the temporal-relational contexts of action — which, through the interplay of habit, imagination, and judgment, both reproduces and transforms those structures in interactive response to the problems posed by changing historical situations. (p.970)

Emirbayer and Mische (1998) then outlined three temporal elements encompassing agency: iteration (the past), projectivity (the future) and practical evaluation (the present). In this three-dimensional view of agency, human actors configure the influence of the past, orient

towards the future and engage with the present. The human agency does not only lie in routinising their practices, but also in imagining alternatives, and critically evaluating current situations to shape their responses. Table 4.1 maps the internal chordal structures of the three dimensions (primary tones are highlighted) and their connections (secondary tones). To take it further, the Emirbayer and Mische (1998) definition of agency as "temporal constructed engagement" (p.970) means that social actors achieve agency rather than possess it. Moreover, the agency comes from actors' past achievements as routinised patterns, imaginations of alternative futures, as well as critical evaluations of emergent situations. That is, the analytical expression of agency enables the view of social actors' agency not as a given capacity but as a continual growth through temporal passages and their interactions.

Table 4.1 A Chordal Triad of Agency (Emirbayer and Mische, 1998): table adapted from Priestley A. (2020, p. 525)

	Past	Present	Future
The Internal Structure of Iteration (pp.978-981)	*Selective attention* *Recognition of types* *Categorical location*	*Maneuver among repertoires* (past→ present)	*Expectation maintenance* (past→ future)
The Internal Structure of Practical-evaluation (pp.997-1000)	*Characterization* (present→ past)	*Problematization* *Decision* *Execution*	*Deliberation* (present→ future)
The Internal Structure of Projectivity (pp.988-991)	*Anticipatory identification* (future→ past)	*Experimental enactment* (future→ present)	*Narrative construction* *Symbolic recomposition* *Hypothetical resolution*

Table 4.1 maps the primary tones of each dimension of agency (in highlight) and secondary tones overlapping two dimensions. Mapping them in this way is helpful to show that "a *chordal triad* of agency within which all three dimensions resonate as separate but not always in harmonious tones" (Emirbayer and Mische, 1998, p. 972). For example, the past influences the future through *expectation*, in which the social actors anticipate their past experiences would repeat in the future. Their prediction could face unexpected scenarios, hence holding on to the *expectation* may limit teachers to visualise alternative futures in *recomposition*.

Instead of contributing to the conflation of agency/ structure, Emirbayer and Mische (1998) theorised agency by distinguishing different dimensions and articulating the interplay. This alternative approach evolved into an ecological perspective when Biesta and Tedder (2007) brought in the notion of agency to discuss the relationship between agency and learning in the life-course:

> We approach agency as something that is achieved through the active engagement of individuals with aspects of their contexts-for-action. On the part of the actor, such engagements are characterised by particular configurations of routine, purpose and judgement. (pp.132-133)

This view of agency embeds an ecological understanding because it highlights the role of actors' lives in achieving agency. It is not just about their experiences but also the way actors interpret their lives. Life stories become crucial for actors to routinise, construct narratives, and connect to emerging situations. The strength of this ecological approach is that it enables actors' life stories to reveal interconnections and outline relevant ecological conditions (Biesta and Tedder, 2007). However, they also recognise that actors' life stories have aspects that do not fit with this picture and that structural factors can also have an impact on individual cases. This is where Biesta and Tedder (2007) suggest a different view on structural factors and individual cases:

> structural factors only can have an impact if people actively engage with them, i.e. when they take them up in their biographies in their own, unique ways (see also Archer, 2003). (p.146)

The key argument of Archer (2003) is that structure and agency need to be analytically separable in order to elucidate the interplay between structure and agency. Archer (2003) distinguished "the existence of structural properties and the exercise of their causal powers" (p.7). According to Archer (2003), whether constraints and enablements derived from structural and cultural emergent properties are exercised as causal powers is contingent on agency. More specifically, it depends on whether an actor' agency embraces the kinds of projects upon which structural properties can impact. In sum, the sociological perspectives are important theoretical sources for an ecological perspective of agency.

4.2 Theorising agency in relation to teachers

This section introduces an ecological approach to teacher agency, which is mainly based on the work of Emirbayer and Mische (1998), Biesta and Tedder (2007), and Archer (2003). Priestley, Biesta and Robinson (2015) proposed an ecological framework to understand teacher agency, addressing the iterational, projective and practical-evaluative dimensions of teachers' work (see Figure 4.1).

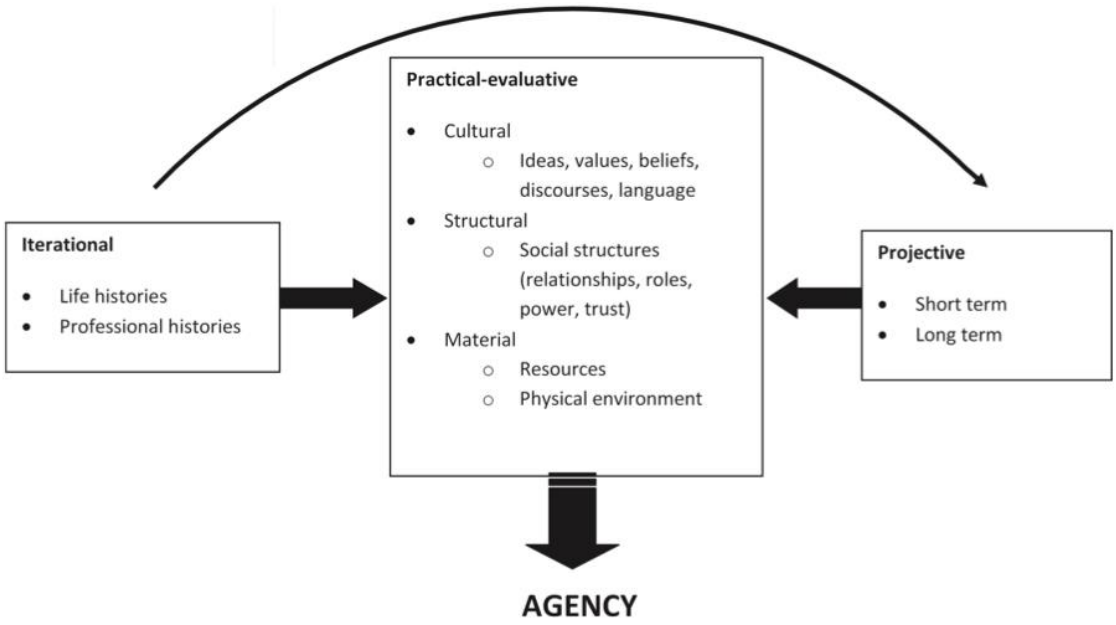


Figure 4.1 The teacher agency model (Priestley, Biesta and Robinson, 2015, p. 30)

While the three temporal dimensions show an influence from Emirbayer and Mische (1998), the cultural and structural in the practical-evaluative dimension exhibit Archer (2003)'s influence on the interplay between culture, structure and agency. For the ecological approach, Biesta and Tedder (2007) proposed viewing agency towards an ecological perspective.

Regarding the iterational dimension, Priestley, Biesta and Robinson (2015) put general life histories and specific professional histories, including "both their own education as a teacher and the accumulated experience of being a teacher" (p.30), outlining eight iterational aspects contributing to teacher agency:

- personal capacity (skills and knowledge)
- beliefs (professional and personal) and values
- professional education

- day-to-day experience in schools – dialogue with colleagues, exposure to school culture
- other professional engagement
- teachers' own schooling
- professional experience outwith education (e.g. working in other professions) (pp. 31-32)

There are intersections between personal histories and professional histories regarding teachers' professional education and engagement. Notably, policymakers have an influence on teachers' professional histories (Priestley, Biesta and Robinson, 2015). Although teachers' reflections upon their experiences could develop their capacities and contribute to them becoming agents of change, it is vital to recognise that some experiences are out of teachers' control. This also reflects the interplay between agency and structure.

For the projective dimension, Priestley et al. (2015) consider "orientations of action" (p.30) with two timescales: short-term and long-term. More specifically, the teacher agency framework concerns teachers' "aspirations in respect of their work" (ibid, p.32). According to Priestley et al. (2015), teacher aspirations could be related to students' welfare, leading to their agency facilitating student development; Teacher aspirations could be fully support, remain hesitant or even go against policy intentions, yet all of these attitudes toward policies have deep roots in teachers' beliefs and values. Hence, putting aspirations with their motivations when entering teaching helps to bridge the projectivity and iteration. Priestley et al. (2015) also highlighted the importance of the role of teachers' strong beliefs about "subject identity" (p.32) and prior professional experiences in shaping their aspirations, with an awareness of agency eroded by "managerialism in education" (p.33).

The iterational and projective dimension both have an impact on the practical-evaluative dimension. Priestley et al. (2015) distinguish between cultural, structural and material aspects, highlighting their importance respectively (see Table 4.2). According to Priestley et al. (2015), the "capacities and capabilities of individuals" (p.35) are important and might even be viewed as necessary, but not sufficient conditions for agency to be achieved. In other words, the existing cultures and structural issues should receive attention when discussing how to promote individual's agency, not just enhancing one's own capacities.

Table 4.2 Three aspects in the practical-evaluative dimension and their importance

Aspects	Definition (p.30)	Importance (p.34)
Cultural	Cultural aspects have to do with ways of speaking and thinking, values, beliefs and aspirations, and encompass both inner and outer dialogue.	ways of thinking, understanding and talking about the issues and the situation – and this concerns both 'inner' dialogue (one's own thinking) and 'outer' dialogue (one's conversations with others in the situation)"
Material	Material aspects have to do with the resources that promote or hinder agency and the wider physical environment in and through which agency is achieved.	the material aspect of the situation (such as the build environment, the physical resources)
Structural	Structural aspects have to do with the social structures and relational resources that contribute to the achievement of agency.	social relationships (both the way in which particular relationships can support the achievement of agency and the way in which such relationships can hinder this achievement)

Regarding the practical and evaluative dimension of teachers' work, Priestley et al. (2015) outline factors which may conflict with teacher aspirations and beliefs. First, teachers' day-to-day working environment may have "conflicting pressures in teachers' work" (Priestley, Biesta and Robinson, 2015, p. 33), which require teachers to compromise and sometimes even act contrary to their aspirations. Meanwhile, "relationships in schools" (ibid, p.33) may also restrain teachers in a vertical hierarchical structure with limited horizontal relationships. If a teacher works in a school without an effective structure encouraging them to discuss and interpret new policies, it is less likely to enable a teacher to think dialogically about the policies, let alone make sense of them. That is, even a teacher who has substantial skills, knowledge, and strong aspirations, may find that in their concrete situations, any attempt to innovate or act differently could be difficult or risky.

4.3 Connecting teacher agency and curriculum making

This section summarises scholarly literature connecting teacher agency and curriculum making. By doing so, what this study can contribute becomes clear. As there has not been any literature on teacher agency and geography curriculum making specifically, the review is mainly about teacher agency and curriculum making.

Priestley M., Edwards, Priestley A. and Miller (2012) addressed teacher agency in the context of curriculum making in schools with an ecological view of agency. They argue that both "environmental conditions of possibility and constraint" (ibid, p.191) and teachers' beliefs and values influence how teachers mobilise certain situations, resulting in teachers' capability to "achieve agency vary from context to context" (ibid, 191). Their study is relevant to my study for providing insights to understand teachers' engagement in curriculum making at the classroom level, outlining the translation from the prescribed curriculum to the enacted curriculum and everyday practices in teachers' classrooms. Their analysis utilises the chordal triad proposed by Emirbayer and Mische (1998), addressing teacher agency from the projective, practical-evaluative and iterational aspects. They noticed the significant role of "repertories for manoeuvre, or the possibilities for different forms of action available to teachers at particular points in time" (Priestley *et al.,* 2012, p. 211) in teacher agency. This view is influential for my study for pointing out that the temporal aspects of agency are about the "possibilities" (ibid, p.211) afforded by the contexts. In other words, teacher agency in curriculum making is not what teachers do but whether teachers think they can do something or refuse to not do something.

Hizli Alkan and Priestley (2019) explored curriculum making with a focus on teacher mediation, focusing on the role of reflexivity. Their study drew on Archer's theoretical constructs of reflexivity and internal conversation, relating teachers' different approaches to curriculum making to their modes of reflexivity. Although reflexivity has not been mentioned in my previous review of teacher agency, reviewing their study is helpful in two ways. The theoretical framework is also from Archer (2003, 2007), who defines reflexivity as:

> the regular exercise of the mental ability, shared by all normal people, to consider themselves in relation to their social contexts and vice versa (Archer, 2007, p. 4)

First, this definition of reflexivity is connected with a human agency for its focus on the mental ability to think the interplay between oneself and their social context. This is related to one's imagination and evaluation of their possibilities. Second, this work further develops teacher agency (Priestley, Biesta and Robinson, 2015) suggesting that despite the structural and cultural conditions frame teachers' work to a large extent , individual teachers' mode of reflexivity is still an important factor in shaping their responses to reform policy. Moreover, it is not just about improving teachers' professional knowledge or swift mindsets to reform, but developing "more constructive modes of reflexivity" (Hizli Alkan and Priestley, 2019, p. 752).

Hizli Alkan (2021a) also provides a qualitative ego-network approach to understand teachers' professional network in the context of curriculum making. By doing so, the structure, composition and the content of teachers' networks can be analytical to understand teachers' mediating role in curriculum making. Hizili Alkan (2021b) emphasises teachers' reflexivity and network and views teachers' curriculum making as relational practices. She investigates the mediatory role of internal and external conversations to examine the role of reflexivity in teachers' curriculum making. Although Hizli Alkan's study does not directly use the word teacher agency, her analysis of teachers' reflexivity for their mediating role as curriculum makers is helpful for this study to unpack teachers as agents of change. Hizli Alkan's thesis (2021) also inspired this study to be aware that internal conversations that teachers may have with themselves also have an influence on their curriculum making, not just what teachers feel ready to share with others as external conversations.

Teacher agency and curriculum making are mutual "constitutive" (Priestley *et al.*, 2023, p. 192) concepts. Priestley, Alvunger, Philippou and Soini (2023) notice that the temporal dimensions of teacher agency resonates with curriculum making as a social practice. For example, the iterational dimension brings prior personal and professional experiences to discuss possible prerequisites for teachers to think how and why they develop certain understanding of curriculum and how they work with the curriculum in their classroom. Sketching a teacher's past sees a teacher as an individual and a person within specific contextual conditions. By connecting the iterational dimension of teacher agency and curriculum making, it is possible to investigate how teachers' selective attention on particular experiences influences their orientations of agency being exercised in the present.

The ecological understanding of teacher agency provides a temporal-related approach to investigate how teachers' past experiences, evaluation of their present situations and future projections influence their choices. When the Lambert model (Lambert and Morgan, 2010; Lambert and Biddulph, 2015; Lambert, Solem and Tani, 2015) refers to teachers' choices, it does not explicitly explain where and why teachers make particular choices. The ecological approach of teacher agency provides an insight to view the interplay between teachers' choices and contexts. For example, the choices are not only related to teachers' perception of contexts, but also how the resources (e.g. textbooks, access to professional networks) provided by the context influence teachers. Connecting teacher agency and curriculum making enables an analysis of teachers' choices across three temporal dimensions.

More than temporal dimensions

Beyond the three temporal dimensions (iterational, projective and practical-evaluative), a space lens to view teacher agency (Rushton and Bird, 2023) also helps this study to entangle the cultural, material and structural conditions of agency. Rushton and Bird (2023) find that teachers move between and create spaces when they seek to achieve agency. The spatial dimension furthers the understanding of the temporality of agency. In this study, teachers talk about their events at different spaces, and the research also creates a space for me and participant teachers to revisit their past experiences, future projections and current situations.

4.4 Summary

Overall, reviewing agency, teacher agency, and reflexivity contribute to this study by being aware that agency is an analytical framework to understand teachers' curriculum making. First, it has the potential to understand teacher choices in the Lambert model; Second, it can be analytical to understand the interplay of teacher choices with other factors or the absent structural and cultural factors in the Lambert model. Thirdly, it gives guidelines to design my research to know teachers through iterational, projective and practical-evaluation dimensions. Last but not least, by adopting an ecological view of agency, studying agency means investigating the interplay between agents (in this case, teachers) and their structural and cultural environments. It is important to be aware of the reflexivity.

5 Methodology

This chapter outlines the methodological approaches taken in this research. It starts by positioning my research with a philosophical position of critical realism. The second section explains my choice of case study method. The third section connects research questions with my initial research design, the data collection that evolved in practice, and consequent data analysis approaches. The final section reviews the ethical considerations and limitations of this study.

5.1 Researcher agency in choosing critical realism

In a thesis where agency is a key concept for constructing the research, it is appropriate to present my critical realist ontology as a researcher. The journey I went through to design my research would not have been possible without recognising my personal and professional experiences. In this section, I introduce critical realism with an awareness of my agentic role in choosing it.

In 2017, at the Institute of Education, University College London, I chose a course called *Critical Realism for Beginners*, which introduced Critical Realism (CR) as a philosophy of the natural and social sciences. The course made me question my previous attachment to positivism, in which I used to see myself as an objective and neutral researcher studying objective facts. It also prevented me from falling into interpretivism, which considered everything as a construction with specific social contexts, hence no fixed realities. CR provides an approach to recognise that natural sciences deal with things and social sciences explore ideas, suggesting that research could deal with both ideas and things.

At first, I did not accept nor even understand that CR meant a transition from a binary 'either positivism or interpretivism' to recognise 'both positivism and interpretivism' could shed light on problems where either ontology may be limited. The transition was extremely difficult for me as I grew up studying for exams where there is 'one correct' answer, or 'the best way' to answer it. I was taught and disciplined to choose the correct one and aim at the best way to perform 'academically' well and step up to the next phase of education. As a student, I learned to internalise these successful experiences so that I can apply them in future scenarios. As a teacher, I passed on my successful experiences with good moral intentions that these experiences would help my students in improving their learning outcomes.

My past personal and professional experiences have shaped me to agree with finding the most scientific way underpinned by positivism as the only (and the best) approach. Despite my confusion, I held an image of myself as a good student who would not quit. I stayed in the course and aspired to understand critical realism by reading more about it. This was when CR started to shake my belief in positivism by suggesting that reality has three domains (Bhaskar, 1998). Table 5.1 presents the overlapping of these three domains.

Table 5.1 Three domains of reality in critical realism (Bhaskar, 1998, p. 41)

	Domain of Real	*Domain of Actual*	*Domain of Empirical*
Mechanisms	√		
Events	√	√	
Experiences	√	√	√

The domain of *empirical* is only constituted of experiences, while the domain of *actual* contains events and experiences, and the domain of *real* has experiences, events and mechanisms. If an ontology is just based on empirical realism, then the three domains are collapsed into one, not allowing each domain to have certain independence. However, the three domains are irreducible to each other. As experiences could be personal, one person's impression and evaluation of their own experience with certain events could be different to others. For example, everyone teaching Gaokao in 2023 may have different experiences and make sense of their experiences differently in their memories. Their experiences are domains of the empirical, which are co-existing realities which can differ markedly. However, this does not change the exam as an object in the domain of *actual*. Gaokao actually existed as an event in 2023 on certain days. Bhaskar (1998) considers that the actual domain has "constant conjunctions" (p.30) between events and experiences, which means realities in the domain of *actual* and *empirical* have an inevitable causation relationship. For instance, if the Gaokao did not happen on certain days in 2023, no one would have empirical experiences of this event, their empirical experiences are caused by taking Gaokao.

As for the domain of *real*, Bhaskar (1998) refers to *real* as the causal mechanisms shown in the effects. I remembered an example my tutor gave: gravity. They said that one can only

reach towards the *real*, but may not get there. In the case of gravity, one cannot see it, but it is the real cause of us standing on the Planet Earth and Newton's observation of seeing an apple falling off the tree. Taking the example of Gaokao further, in the domain of *real*, the mechanism could be related to social structures of class, power and inequality. However, I may get closer towards the domain of *real*, but may not provide the causal explanation which explains everything. Just like quantum mechanics later proved that gravity might not work at the atomic level, my study in relation to Gaokao could unpack some causal explanation to understand the other two domains, but I will not provide THE explanation.

For this study, choosing Critical Realism is enabling. It means I can enter the domain of *empirical* where teachers have their experiences. I can interview, observe and request documents from them to understand their experiences, memories and evaluations of their experiences, without judging whether they are right or wrong. I cannot avoid choosing and interpreting some data in my study, but I am also aware that the data were just a clip of teachers' words or practice in the past, which did not mean they always thought or acted in the way I interpreted. Through this domain of *empirical*, teachers' realities co-exist with each other, I can investigate their patterns of curriculum making, which is to some extent observable. Meanwhile, curriculum making also exists in the domain of *actual*, where the structures exist, but teachers may not be aware of them, or may not connecting their experiences (teaching practices) to the event (curriculum making). I can go further to explain the underlying mechanism, which is not yet visible. The strength of CR is that it is ontologically inclusive (Bhaskar, 2014), which makes it possible for my research to accept that each participant teacher has the right to interpret their practices in the domain of *empirical*, and I can connect different empirical experiences to communicate with curriculum making as an event in the domain of *actual*, independently to experiences.

Recognising teachers' experiences and communicating experiences with existing literature matches my aspirations to respect teachers' different sense-making processes of their engagement with the curriculum, as well as allowing my interpretation. Although teachers may not see their experiences as curriculum making, what they have done can be seen by me as part of curriculum making at classroom level. I am informed by scholarly literature and frameworks of curriculum making. However, it is not to impose my interpretations on teachers as the actual domain, but to bring my experiences as an equal but different domain of empirical to teachers. The connections I make between experiences and events in relation

to curriculum making are also just one of many possible explanations. Despite being one of many, this research is still valuable for providing some horizontal and vertical explanations to understand further the overlaps between domains of empirical and domains of actual.

5.2 A qualitative case study approach

I chose a qualitative case study approach as it best fits my research purpose. This research aims to understand geography teachers' curriculum making in Shanghai, which requires in-depth descriptions of the schoolteachers and their experiences as well as their conditions. In this case, Gaokao and National Teacher Certification Exam (NTCE) reform. The qualitative approach (Freebody, 2003; Creswell, 2014; Cohen, Manion and Morrison, 2018) fits more than quantitative and mixed methods in three aspects:

- The study is small-scale and focuses on the individual, looking for non-statistical data to outline the events in complex and local settings;
- The researcher's involvement is to understand and explain, not predict and control;
- The participants' individual perspectives and personal constructs are valued human actions which continuously recreate social life.

I consider the case study research as the most suitable approach to design my qualitative inquiry. First, case study research allows an exploration of "a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection" (Creswell and Poth, 2018, p. 153). This study resonates with these features as it explores Shanghai geography teachers in times of change and aims to provide an in-depth understanding of complex phenomena bounded by multiple systems.

Second, other approaches have limits to answering the research questions. Creswell and Poth (2018) outlined four other approaches: narrative, phenomenology, grounded theory and ethnography. The grounded theory is not applicable as I have utilised a theoretical framework to design this research. Narrative research is good at telling stories, but the analysis orients towards history, while this study looks at stories to find their connections with events in domain of *actual*. For example, my focus is on teachers' responses and interpretations of curriculum making, which is a particular event. The narrative might help to provide the background (the iterational), but I need a dynamic method to interpret a particular event. The phenomenology research values lived experiences, but its philosophical stance is closer to

interpretivism than critical realism. The ethnographic research was not possible considering the data collection time was during the COVID-19 pandemic.

More importantly, ethnographic research tends to do participant observation of an entire culture-sharing group (Creswell and Poth, 2018), but my study is not about culture or group, but on individual teachers with diverse backgrounds in teaching. Overall, case study is the type of design that suits my inquiry. My research looks at ongoing complex social phenomena beyond my control. I aspire to know how teachers work with the curriculum, why teachers have certain conceptions and practices regarding curriculum making, and how their agency differs. These fits three conditions for favouring the case study approach (Yin, 2019):

- "how" or "why" questions are driving main research questions;
- the researcher has no or little control;
- the case study focuses on contemporary events.

Within the case study approach, the multiple case study suits this research more as it studies multiple cases to understand their similarities and differences (Stake, 2006; Yin, 2019). Unpacking my research questions with the research design helps to demonstrate the relevance of the multiple case study approach (see Table 5.2).

Table 5.2 My research questions and their connections to 'how and why'

Research questions	Connections to 'how and why'
RQ1: In what ways do Shanghai geography teachers conceptualise geography curricula and curriculum making?	a. Teachers all have certain concepts in their mind, how do they formulate these conceptions? b. Why do they have these conceptions?
RQ2: To what extent do the Shanghai geography teachers' curriculum making conceptions align with the Lambert model?	a. How much alignment exist among teachers' conceptions and the Lambert model? b. Why some conceptions are more aligned with the Lambert model than others?
RQ3: In what ways does Shanghai geography teachers' agency influence their curriculum making?	a. How much agency have these teachers achieved and where does their agency come from?

	b. Why do some teachers seem to achieve more agency than others and whether teachers choose to capitalise on that agency?

5.3 Research designs and activities

This section starts by introducing the initial research design in relation to the research questions, then explores how these evolved in practice, explaining why and how these changes were made. The qualitative approach informs the design to value both researchers and participants' actions throughout all stages of the project (Maxwell, 2012). In other words, the activities of collecting and analysing data are not pre-determined but designed and redesigned during the research process.

5.3.1 Designing sampling strategies and practice sampling

Taking the Gaokao reforms as a starting point, I designed the sampling by considering the kinds of teacher experiences in the system. Two key variables present in:

- Teachers who began teaching before the 2014 Gaokao reform and teachers those who started after it. This would ensure I had some teachers who were only familiar with a context where geography had a privileged position and some who remembered when geography was less favoured.
- Teachers who qualified after a formal process of initial teacher education and teachers who qualified by virtue of taking the NTCE examination without formal training. This would allow me to see whether university teacher educations influenced teacher imaginaries.

Purposive sampling meant choosing cases to include based on judging their typicality and assembling sample that meet specific needs (Cohen, Manion and Morrison, 2018). For this study, it is also important to access "people who have in-depth knowledge about particular issues" (Cohen, Manion and Morrison, 2018, p. 219), hence, seeking a random sample for breadth would not provide the depth required by this study. It was not my intention to extrapolate from my research participants to generalise about the experiences of all teachers in Shanghai. The following criteria were purposely designed and approved by the ethics committee:

- Geography teachers qualified through either of the three different routes (at least two per route):
  a) ITE route; b) NTCE route with ITE; c) NTCE route without ITE
- They are full-time employed geography teachers by state-owned Shanghai schools.
- Before June 2021, these participants should had taught both Year 10 and Year 11 students (took geography Gaokao) for at least a whole academic year, meaning they had professional knowledge and experiences of teaching geography to Gaokao level.
- To keep them untraceable, they should not be well-known or well-published for their teaching.

After setting criteria to complete collection of my samples, I intend to maximise variations to achieve representativeness and fit this study's intention (Cohen, Manion and Morrison, 2018). The permutation of criteria resulted in four types of teachers as shown in Figure 5.1. In this study, the extreme case would be a sample teacher who took geography Gaokao, always wanted to teach geography, studied ITE and got qualified, while the other teacher did not take geography Gaokao, and never considered teaching before noticing the demand for geography teachers and sat NTCE to qualify without ITE backgrounds. The sampling process was not intended to represent geography teachers in Shanghai or China. The sampling was designed with the intention to maximise variations regarding the time participants entered teaching and their teacher education backgrounds.

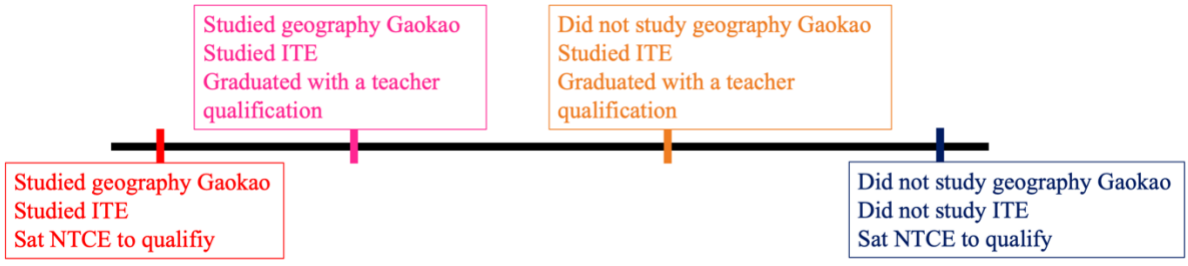


Figure 5.1 Four kinds of teachers' education backgrounds and qualification routes

I chose reputational case sampling (also known as snowball sampling), a type of purposive sampling (Cohen, Manion and Morrison, 2018), in which samples are selected by key informants rather than myself. The benefit of this sampling is to put me in touch with further individuals. The above criteria were shown to my contacts in my professional networks in Shanghai for their nomination of suitable candidates for the sampling. The informants then

recommended potential teachers who met the criteria to me. I approached these potential participants to introduce myself and my research project with an information sheet, to which participation is entirely voluntary. I am grateful for those who volunteered to participate, and I remain cautious not to treat them as representative of a particular set of characteristics. Nine participants were eventually finalised (Table 5.3) of which I was aware that they do not necessarily represent every way that geography teachers work within the system. Ensuring a wide collection of teachers' education backgrounds and entry routes is to possibly show different examples of teachers working in Shanghai schools.

Table 5.3 Participant teachers in their gender-neutral pseudonyms and background

Pseudonyms	**ITE background**	**Teacher qualification route**	**Years of teaching***	**Time entering teaching**
Alex	Undergraduate	ITE	6-10 years	Before 2014 Gaokao reform
Bo			6-10 years	
Cai			>10 years	
Da	Postgraduate	Shanghai provincial teacher certification examination	6-10 years	
Eli			>10 years	
Fay	Undergraduate	ITE	<5 years	After 2014 Gaokao reform
Gal		National Teacher Certification Examination (NTCE)	<5 years	
Hui	None		<5 years	
Kit			<5 years	

*Years of teaching was counted before their first participation of this study (Aug/Sep 2021).

Changes in sampling

After several attempts, I recognised a challenge that teachers with particular backgrounds were difficult to recruit with reputational case sampling. My social networks are related to my background in teacher education and work experiences in Shanghai, making it easier to access further individuals involved in ITE routes. Secondly, I am a Scottish-based doctoral researcher who was studying Chinese education during the pandemic. Although key informants introduced me to further individuals, several potential participants with NTCE routes without ITE showed concern with my research and with signing the consent form. In hindsight, it could be they were wary and self-censored to avoid the potential risks of being

blamed for disclosing classified information to someone outside China. One assumption is that these teachers worked in Shanghai, and knew the government did not disclose any geography Gaokao exam papers or numbers of geography examinees in Gaokao. They considered these as classified data that they should not openly discuss with someone abroad. In addition, participating in my research is a time-demanding activity, with participants volunteering in their spare time.

This was not the case for teachers with ITE experiences as part of their studies were learning to do educational research. I think their higher education experiences prepared them ~~to~~ in understanding the intent of my research. While some were unfamiliar with research ethics procedures, but they understood it as a more formalised way of conducting research ethically. They showed appreciation for having an option to disclose their gender, which reduced the possibility of their identification. Some of them chose to reveal their gender, but the process of giving them a choice and informing them of the risks made these participants feel respected. In other words, the communications around research information sheets and consent forms helped me build rapport and a relationship before their participation.

However, I still intended to maximise variations. To find people with NTCE routes but less concerned about me 'spying' on them, I discussed it with my supervisors, and we agreed to contact people in my network but not acquaintances. They were more likely to acknowledge my integrity and were not so sceptical of my intentions. Compared to participants I did not know before the research, these people I knew from previous social networks had a better basis to sustain the research relationship. The disadvantage was that the convenience sampling type made them a bit more traceable than others. Furthermore, I already had some existing opinions about them, which led to me having some biases on them in comparison to others who were not known to me before participation. Overall, I chose purposive sampling with criteria that fit my research context. I mainly used reputational case sampling with supplementary convenience sampling as a supplementary to finish the collection.

5.3.2 Designed data collection and data collection processes

In this section, I started by describing my designed data collection techniques, then what I actually did in data collection. Arranging my writing in this sequence provides reader an insider view to see collecting qualitative data as collaborative interactions (Flick, 2018). This

arrangement also describes me as a qualitative researcher who grew to become more aware of contexts and case teachers through the reflexivity interactions (Flick, 2018) I brought to my study. I considered myself as part of the research process in collecting data.

The data collection comprised three phases for each case study based on the ecological teacher agency framework (Priestley, Biesta and Robinson, 2015). Phase 1 focused on the past and the future, featuring a life story interview of teachers that reviewed their past experiences and imagined possible futures. Phase 2 consisted of the reflective diary, inviting each case teacher to keep a written log of their work regarding the geography curriculum. The other activity within Phase 2 was for teachers to send me teaching materials they mentioned in the Phase 1 for discussion. Then Phase 3 organised an interview focusing on teachers' current situations. The Phase 3 interview was conducted open-ended as the participant and I had a certain degree of rapport. I asked more in-depth questions about their teaching materials, what they had done recently, and chased their justifications.

The research questions guided the design of the data collection process in the case study. The plan was to have two formal one-to-one semi-structured interviews with each participant. Teachers were to send teaching materials to me after the first interview. Between the two interviews, participant teachers would also write reflective diaries. Teachers' words and documents were triangulated with my observational notes. When in need, I also used official documents such as geography curriculum standards and geography textbooks as referential documentation. Table 5.4 presents my intended data sets aligned with the RQs that they were intended to help answer. Followed by the intended process, I then explained changes happened during my data collection and the consequent changes I made to collect data.

Table 5.4 Research questions and intended data processes

Research questions	Data sources (techniques)	How to analyse data
RQ1: In what ways do Shanghai geography teachers conceptualise geography curricula and curriculum making?	- life story interviews (personal and professional experiences) - curriculum resources that teachers often use and teaching materials -teachers' reflective diaries	Within case analysis - formulate biographies of teachers and patterns in their work with geography curriculum

RQ2: To what extent do the Shanghai geography teachers' curriculum making conceptions align with the Lambert model?	-design and ask interview questions related to five key elements in Lambert model (educational aims; geography discipline; students; teachers; school geography) -teachers' teaching materials -teachers' reflective diaries	Cross case analysis -analytical model: The Lambert model of geography curriculum making
RQ3: In what ways does Shanghai geography teachers' agency influence their curriculum making?	-thematic interviews based on the iterational, projective and practical evaluative dimension of agency -teachers' teaching materials -teachers' reflective diaries	Cross case analysis -analytical framework: the teacher agency framework

What changed in my data collection processes?

The reflective diary was the most challenging part for nearly half of the participants of the data collection process. One of the specific reasons was due to resistance from participants in its production. The activity being time-consuming was a major hurdle in that several participants mentioned that they could not find time to write a reflective diary "for me". It also occurred to me that a diary also had a cultural meaning in China, meaning writing something personal daily just for oneself. The cultural context of writing *reflective* diaries when understood in Chinese *fansi (反思)* could be understood as '*self-criticism'*. The cultural understanding of journaling as a reflective learning log between Chinese and English became explicit when I encountered some teachers' reluctance to diary writing. Another reason was related to participants' previous personal experiences. One of the participants said they were 'traumatised' by a school teacher who always criticised their writings, as a result, they would not write anything whenever possible. As a result, the reflective diary became an optional choice for participants. For those who chose to write reflective diaries, their diary entries at the second interview were used for discussion at the second interview (Phase 3) following the initial plan; for those who did not write, the guideline questions I put in the reflective diary document were later discussed in the second interview (Phase 3) as interview questions.

Another reflexive adaptation to participants' responses occurred when participants were questioned upon their conceptions of curriculum making. The initial design only intended to

ask participants their understanding of five key elements (educational aims, geography discipline, students, teachers; school geography) in the Lambert model and their possible connections. In the second interview (Phase 3), they talked about their thoughts on the five elements. I asked if they would like to draw the connections between and among the five elements. Then I opened a PowerPoint slide and visually showed the five elements in the same size. A participant responded to the question by suggesting for changing the textbox size in accordance with their understanding, or to add arrows to connect different textboxes. Upon discussion with my supervisors, this activity was added to the data collection design. All participants responded positively to this activity.

In a nutshell, the updated research design in my practice was adjusted based on my interaction with participants. The first change was being flexible with participants' timetables and preferences. Even though the data collection techniques changed, rich data were eventually collected. The second change emerged in my interaction with participants. It was adopted due to the value it could offer to data analysis. The data analysis would be more precise by having teachers' conceptions next to the Lambert model. It was only possible after teachers instructed me to portray their conceptions. Teachers' curriculum making diagrams are central in two data analysis chapters: Chapter 6 and Chapter 7.

Figure 5.2 shows my data collection process and consequent data analysis. In this section, I provide examples of specific inputs I used for data collection. See Appendix 7 for the whole interview and reflective diary guidelines. The next section gives more details about data analysis and how it worked in practice.

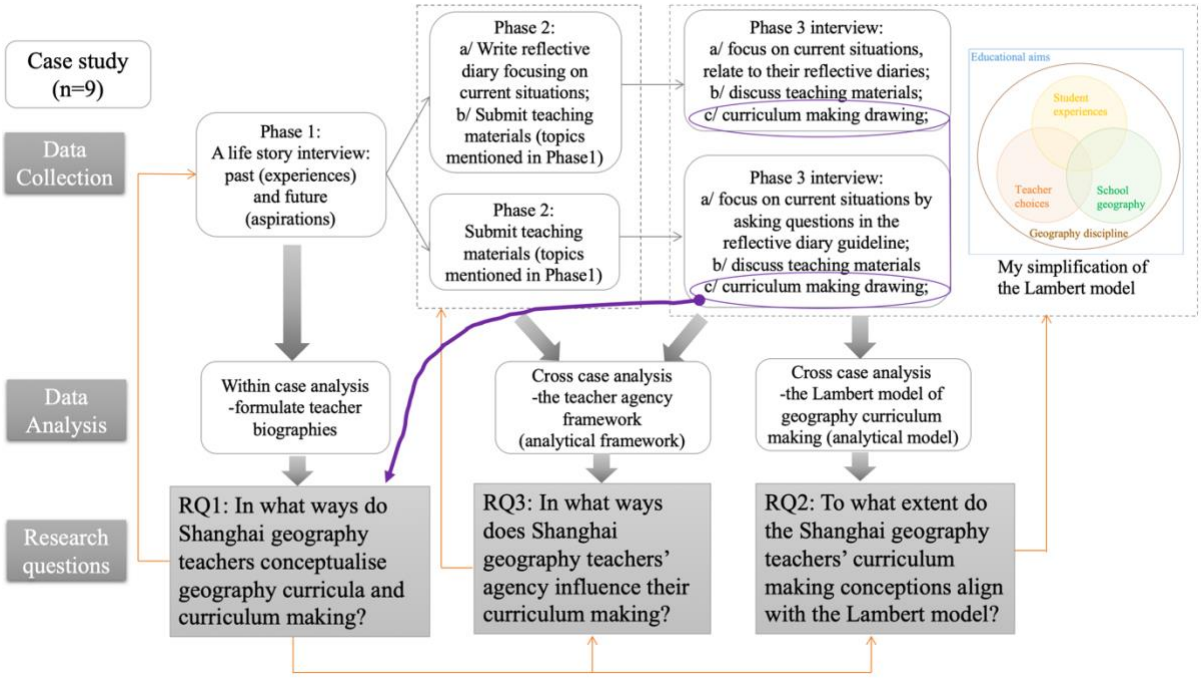


Figure 5.2 Data Collection and analysis in connection to research questions

Examples of questions asked in life story interviews

To balance breadth and depth in the interviews, I designed them to be semi-structured, covering both main topics and probes to free-ranging deep conversations (Roulston and Choi, 2018). The Phase 1 life story interview was designed with two main topics: teachers' lived experiences and their future aspirations. The design of the lived experience topic was based on the teacher agency model's (Priestley, Biesta and Robinson, 2015) iterational dimension. I started with this topic to draw an event timeline of each participants' journey into teaching. The first question to every participant was: "How did you become a geography teacher?". If their answer did not cover their teacher qualification route, I asked "what did you do to become a certified teacher?" to know details of participants' route to qualify as a geography teacher. After these two descriptive questions, the third question was "Why did you choose this career?" The interviews were designed to be one-to-one semi-structured interviews, I then asked different follow-up questions and invited participants to tell me more details on their memories of becoming a geography teacher. Following a personal journey, I then I followed a similar structure to know teachers' professional experiences, in particular their previous work experiences and how they came to their current school. Regarding geography topics taught at school, I chose climate change and human migration as two topics for teachers to explain to me how they understand these two topics, where they collect teaching resources to prepare teaching for the two topics and how they taught in previous years.

Regarding collecting documents as data, I intended to collect reflective diary and teaching materials for supporting the analytical work of interview transcripts (Rapley and Rees, 2018) and triangulating (Flick, 2018) by combining them with interviews. The reflective diary was designed to associate with teachers' documenting some experiences they judge as relevant to my study between two interviews. The teaching materials combined participant teachers' judgements of geography topics they were good at teaching, and two topics I asked them to provide. By revisiting the documents provided by teachers in the second interview (Phase 3), I could assess the authenticity of the document and credibility of the content.

Examples of reflective diary log guide

The reflective log guide was presented to teachers as a word document. It was designed to have at least ten entries from participant teachers during Phase 2. I provided five topics as guides if participants do not have clue to write. It was a requirement for participants to follow. However, in practice, few participants actually followed the document and wrote reflective diaries. The previous section "What changed in my data collection processes?" (p.108) gave explanation to participants' resistance to write reflective diaries for this research. In practice, the guide was then used in the Phase 3 as interview outlines.

Here I give an example of how I interpret an entry guide from written words to an interview guideline. In the diary entry guide, I wrote: **"**Please look forward and discuss how your future work with the geography curriculum related to remuneration, repute and responsibility, to sacrifices and regrets, to support and satisfactions, to ambitions, commitments or re-orientations.**"**

In my 2nd interview with each participant, I opened the translated reflective guide document from my side and share my screen. Participant teachers first read the written document, some of them soon started talking and some asked for clarification of terms. When they gave descriptions, I also wrote down some keywords in their response, then I asked them for explanations and justifications.

Examples of teaching materials

The collection of teaching materials ranges from word documents, PowerPoint slides and mind maps. Half of the teaching materials were first mentioned in the Phase 1 interview, which also functioned for data triangulation purpose, in particular two geography topics

assigned by me. Teachers were also encouraged to choose teaching materials of two other topics that they considered as their good practice.

5.3.3 Designed data analysis and data analysis processes

Phase 1 was designed to answer RQ1. In Phase 1, life-stories of the participants were summarised into a one-page biography, which were then sent to participants for their review. I guaranteed each participant that if they were concerned that certain details in my summary might make them traceable, I would delete them. Participants were also aware that they could change the way they were described. In the end, we reached an agreement on their biographies. I then translated them into English for my supervision meetings. These biographies were intended to answer how teachers formulate conceptions of geography curricula and curriculum making, and why they formulated these conceptions.

Following communications with my supervisors and my later analysis, I made further edits to remove some personal information in my summary. In the thesis, biographies were presented along with the curriculum making diagrams that teachers instructed me to draw regarding their curriculum making conceptions (in Chapter 6). This final arrangement not only portrayed teachers' personal and professional experiences, but also provided teachers' voices on curriculum making by introducing the co-constructed diagrams. The curriculum making drawings (collected at Phase 3) contributed to answer RQ1 in a visual way, along with teachers' own voice to express their conceptions.

Examples of qualitative data analysis

The Phase1 life story interview transcripts were used to examine the iterational dimensions of the agency of each participant. They were categorised into: personal experiences, professional experiences and mixed experiences (personal and professional experiences). I colour coded interview transcripts and used three screens to read nine participants' different answers to identify emerging themes from the transcripts. Common phrasing and words were then identified and put into a new document written in English, consisted of a table, and answers in excerpts translated into English as a working document for my supervisors to read and discuss for our supervisions. By putting all participants' recall of school experiences and reading them, I noticed that it was not experiences (what subjects they studied) but participants' interpretations of what they studied made a difference in how they see their role

today. Teachers had various understandings of what they learned from their study, and how they made connections between previous experiences and current work.

Phase 2 was designed to connect Phase 1 and Phase 3. Phase 2 and Phase 3 were designed to answer RQ3, and Phase 3 was also designed to answer RQ2. Here I first talked about the intended data analysis on data collected in Phase 3, which answered RQ2. The analysis of Phase 3 data connected with the diagrams co-constructed by teachers and me in the second interview. I unpacked five elements in the diagrams into: the teacher-student relationship in relation to school geography, and the subject-discipline relationship in relation to educational aims. The analysis first describes the similarities and differences between teacher diagrams and the Lambert model of geography curriculum making, then explains possible reasons behind the differences through data collected in the second interview.

Phase 2 in practice resulted in two strands of participants. Five participants wrote reflective diaries in Phase 2, and four participants discussed the questions in reflective diary guidelines during Phase 3. By integrating data collected from the two phases, the analytical process went through three dimensions of teacher agency (Priestley, Biesta and Robinson, 2015) to investigate what factors have facilitated their curriculum making, what factors have hindered their curriculum making, and what factors might have mixed influences. In practice, I utilised the ecological approach to teacher agency and traced it to Emirbayer and Mische' s (1998) chordal triad (see Table 4.1, p. 86) to explain how each factor plays a role in one's agency in curriculum making.

Examples of qualitative data analysis and data triangulation:

Teaching materials were important and essential in data analysis although they were presented in this thesis due to ethical concerns. For example, one teacher expressed that they exchanged teaching materials with colleagues in Phase 1 interview, which was identified in the teaching materials they submitted for Climate Change topic. The participant teachers' name was not on the PowerPoint slides they sent through. It had another teacher's name. In Phase 3 interview, I checked with the participant teacher whether this was a mistake or not, they admitted that they got this document from their colleague and used it for their teaching.

Teaching materials were collected and saved in the same folder with interview transcripts. Although this thesis did not end up using all the teaching materials mentioned by teachers, I

went back to the teaching materials sent by teachers to ask them details of why they designed the slides in particular ways. These questions were designed as responded verification techniques to ensure two kinds of data sources from teachers: documents and interviews.

The chordal triad is crucial to inform my study in providing primary tones and secondary tones to analyse teachers' agency in Chapter 8. The ecological teacher agency framework informed me to look at teachers' life histories in the iterational dimension. I then looked at the tones in the chordal triad to identify what tones were visible, and saw to what extent the tones influenced teachers to achieve agency for curriculum making or something else.

In the discussion chapter (Chapter 9), I identified five key findings emerged from the data and returned to research questions to discuss the implications of each finding, and how they respond to the research questions and literature.

Overall, the data analysis in practice first described data, then analysed them through the geography curriculum making and teacher agency frameworks. Although I am aware there are other methods, frameworks and theories to interpret my data, the choice of this approach is based on my research trajectories and responses to the literature review, which shaped my understandings of curriculum making and teacher agency.

5.4 The ethical considerations and limitations

Throughout the research process, I have followed the British Educational Research Association's ethical guidelines for Educational Research (BERA, 2019), and secured ethics approval (Appendix 4) from the General University Ethics Panel (GUEP) at the University of Stirling. The section lists the ethical considerations of this study and reflects the limitations of this study. It starts with my self-assessment of ethics for seeking ethical approval from the university, to my thoughts as they emerged during my interactions with informants and participants, and my after-investigation reflections during my data analysis and discussions with my supervisors. Throughout the process, I became more aware of limitations.

5.4.1. Non-traceability

From the participants' side, I first consider non-traceability. Potential deterrents from participating in this research are that teachers are wary of expressing discontent with the

reforms and their consequences in school management and teaching, which could be seen as controversial and sensitive, and not helpful if the participant teachers can be identified easily, resulting in risk of harm to participants. However, the case study approach and teacher biography make it impossible to guarantee the anonymity of participants completely. I took seven steps reduce traceability:

1) Although people in my contact introduced me to potential participants, my contacts were fully aware that they cannot ask if their recommended teachers were accepted or not. Even if they asked, neither me nor their recommended teachers would answer. Even the key informants would not know who were the participants in my study.
2) After potential participants confirmed their entry and shared their schools with me, I made sure these potential participants did not work in the same school. Each participant also would not know each other during their participation.
3) The participants' school names and their local districts in Shanghai would not be disclosed. Any feature to identify their schools would not be mentioned in the study.
4) Their words would be translated into English in my thesis, which also protected them from being identified due to their particular habits of expression in Chinese.
5) Each participant would have a gender-neutral pseudonymised name. They can choose to use "they/them" as their pronouns to not disclose their gender in the study.
6) As a certified interpreter between Chinese and English, I am solely responsible for translating the original data collected from participants.
7) The communication media were emails (to my university email) and Teams; both were password protected, and followed GDPR.

There are limits to confidentiality, which are also made clear in the research information sheets before teachers confirmed participation. Confidentiality will be subject to legal constraints and professional guidelines. If the research uncovers evidence of wrongdoing and potential harm or even crime, I am obliged to contact relevant statutory bodies/ agencies. If the conversations make me worried about the participants or that others might be in danger, I will have to inform relevant bodies/ agencies for help.

5.4.2 Workload

Participants had a preview of their potential time investment in this study in the information sheet (see Table 5.5) before signing the consent form. They were aware that each interview

would take them normally around an hour, and my transcripts are made accessible to them. The cutoff date for participants to extract and change information they provided during their participation was before February 2022. Participants reading their own transcripts part were optional, but they were required to read my one-page biography of them and had to decide whether to approve or make changes to certain details. After their participation, they had my contact information if they wanted updates. However, participants were only allowed to withdraw their participation before February 2022, the assumed data analysis finishing time.

Table 5.5 The planned workload of teachers

Participate in two interviews at Microsoft Teams (compulsory)	1h+1h
Read my summary of their biography after Phase 1 (compulsory); Read interview transcripts (optional)	1h+
Collect and send the requested curriculum/teaching materials: two self-chosen topics mentioned in Phase 1 interview; researcher assigned topics: climate change and human migration	1h+
Write reflective diaries (optional, ten entries at most)	5-10min* per day

From my side, my workload was intense, from arranging interviews to transcribing, and emotional concerns about participants' withdrawal. Although I fully understood and respected participants' freedom to withdraw without explanation, I was worried that I would lose all my participants, which would crush my research as it was a concern that I could not do anything to prevent this, and it was a major concern during data collection. I was very relieved that no one withdrew. The excessive worry was my biggest nightmare during the entire research process. My research would not have moved ahead if the participants did not volunteer when they knew about my research, stayed during their participation, and did not withdraw before February 2022.

On a reflexive note, the process of me as a researcher handing the 'power' to withdraw to participants was incredibly helpful to the dynamics of giving power and building trust. I followed the ethics to give participants the power to withdraw, and they did not withdraw. They chose not to use this power over me, and chose to trust me and my research to present their stories and analyse rigorously. They shared their stories and power with me.

When I put together the ethics application form, I also expressed my concern about lone working and emotional risk. In practice, it was a good experience. On the contrary, the online interviews created a 'space' for the participants and me. The space is not me entering their workspace by shadowing them at school in finding time to talk about geography after work hours. Participants chose their available time for interviews and materials to share, giving them 'power' to be considered and trusted as professionals. Although I was afraid of their withdrawal, when I re-watched the interviews to transcribe, I often had positive feelings that we had good conversations. These recorded video interviews and teaching materials assured me that teachers also took their participation seriously and genuinely. I found their willingness to participate was encouraging for me to continue this study, which they also considered as meaningful and would be helpful to teachers and future teachers.

5.4.3 Data storage

The data comes from email exchanges (reflective diary, teaching materials) and video recordings (interviews through Microsoft Teams). Both are affiliated with my University of Stirling email, which is protected by password-protected desktops, plus two routes verified with a code sent to my phone number whenever I log in. There were no hard copies of original interviews as all the data collection and analysis procedures were carried out online. Only my supervisors had access to read and comment on different versions of translated data. All copies of data will be securely deleted after ten years following the final day of this study. Regarding the collection of personal data, in this study, contact details were kept for admin purposes, and only kept for the duration of the project. No sensitive personal data collected.

5.4.4 Limitations of this research

There are three limitations of research which are worthy of consideration. First, the initial sampling approach in this research was reputational case sampling (also known as snowball sampling). The design was meant to further the investigation by studying people outside my network to reduce existing bias. The specific hurdle that presented with such a sampling method was the suspicion of 'foreign agency'. While it was not within my intention to spy nor distribute any sensitive information, the research did touch upon information that were deemed sensitive to the Shanghai government. The alternative of two participants recruited through convenience sampling was thus adopted as the next best option to fit the research objective, achieving the targets and ranges of participants.

Second, writing a reflective diary and then sharing it with others means one must have both internal and external conversations. It is not the same kind of data if others only talk about questions in reflective diaries. However, it was my wording of the reflective diary which may have a negative influence on participation. The direct translation of the reflective diary into Chinese did not communicate well with some participants.

Thirdly, my analysis of data did not go through participants' checking, as it was optional. None of the participants have requested to read my analysis yet. In other words, my analysis of data was only my interpretation of participants' words, which may not be the same ideation that the participants or other researchers would portray. The limitation is also unavoidable as part of my ontology (critical realism) considers that there is no single truth.

Nevertheless, my interpretation intends to go across different domains of *empirical* and identify their patterns, similarities and differences to better unpack teachers' curriculum making conceptions and explain the role of agency in it. My interpretation contributes to deepening understandings and facilitates conversations with existing frameworks. Hence, it presents valuable insights into teacher agency and curriculum making.

6 Case Study findings in response to RQ1

This chapter draws on the teachers' diagrams to describe the data in two dimensions: teachers' ideas of their relationship with students and language they use to talk about geography and education. The third section introduces teachers' professional networks and curriculum practice. The chapter discusses the conceptualisations of geography curriculum and geography curriculum making across 9 cases. By doing so, the chapter answers *RQ1: In what ways do Shanghai geography teachers conceptualise geography curricula and curriculum making?*

The views of the five teachers who began teaching before the 2014 Gaokao Reform are considered first before turning to the four teachers who entered later. This study uses pre-Reform to refer the former cohort and post-Reform for the latter. The chapter draws tentative generalisations, patterns, and conclusions, which will be expanded and complexified in later analysis chapters.

6.1 Teachers' ideas of their relationship with students

This section outlines teachers' ideas of how they are related to their students by their explanations when they were drawing the curriculum making diagrams. Geography teachers are making the curriculum for the students. Teachers' diagrams also show that school geography is always present in geography teachers' description of their relationship with students. Hence, this chapter starts with teacher-student relationship which is closely associated with how teachers conceptualise geography curriculum.

For ease of reference, the two cohorts are grouped according to similarities in their diagrams. It looks first at the pre-Reform cohort, giving a brief biographical account of each teacher before describing their curriculum making models.

The biography is about one's journey to become a geography teacher, based on each participant's answer to a question in the Phase 1: Life story interview: "How did you become a geography teacher?". Personal biographies are helpful to answer RQ1 by outlining ways for teachers to formulate their conceptions of geography curricula and curriculum making. The diverse reasons to teach in their biographies provide insights to understand how past experiences influence teacher agency for curriculum making (more in Chapter 8).

After the biography, I put the teacher's instructions for me to draw their curriculum making model (see Section 5.3.2 p. 106 for the drawing process). After the diagram, teachers' descriptions of themselves and students and connections between the two elements in the diagram are presented. Section 6.2 will present the other three elements.

The nine accounts show three types of student-teacher relationship relating school geography (see Figure 6.1):

a) **Triadic interactions:** students, teachers and school geography interact triadically
b) **Direct interactions:** student-teacher interactions unmediated by school geography
c) **Indirect connections:** students and teachers are mediated by school geography

When putting together teachers' diagrams, I use emojis to represent factors in teachers' diagrams instead of texts as they occupy less space and are easier to read.

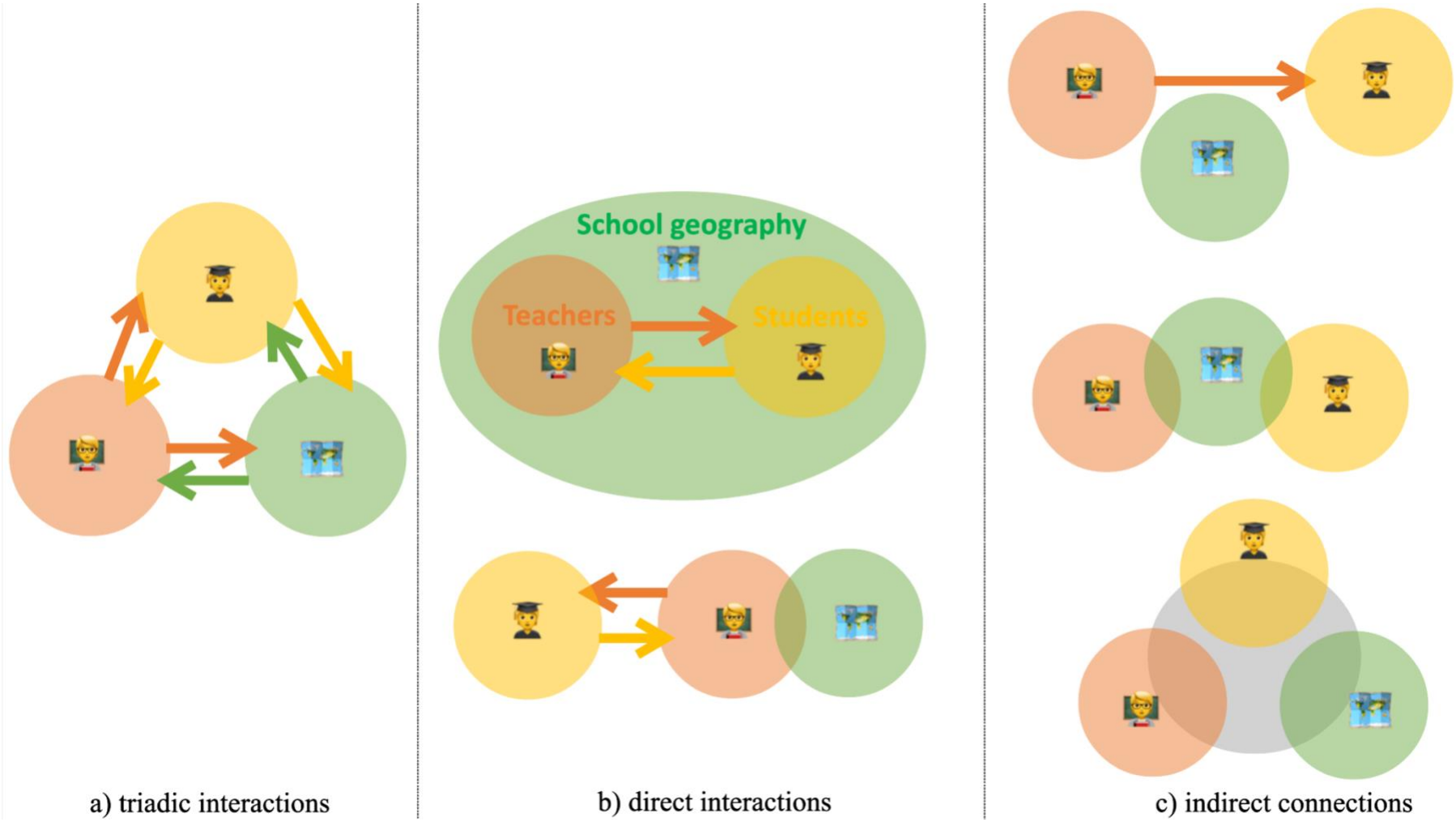


Figure 6.1 Three types of different student-teacher relationship regarding school geography

6.1.1 Pre-Reform teachers' ideas of their student-teacher relationship

The pre-Reform cohort all studied formal teacher education before obtaining teacher certificates. However, they now hold three heterogeneous ideas of the relationship.

a) **Triadic interactions:** students, teachers and school geography interact triadically

- Bo (they/them): biography and diagram

Bo became a geography undergraduate student accidentally. Bo was interested in sciences at school and enjoyed re-explaining physics to classmates when their teacher did not explain the content clearly. Bo wanted to be a teacher and put physics, maths and psychology as their three choices in the university major applications. Bo's father liked history and geography, thus putting them as the fourth and fifth choices without telling Bo. Considering the extra time of transferring to a different major, Bo stayed in the geography department. Bo graduated with a geography degree and a teacher certificate. Despite the fact that their university lecturers' teaching never attracted Bo, Bo developed some interest in human geography and seized the opportunity to study it as a postgraduate. During Bo's postgraduate study, they went to school as a part-time teacher, confirming their interest in teaching. They secured a permanent job in one school. Bo has worked there since graduation.

In Bo's visualisation (Figure 6.2), education is one way of practising the geography discipline, and school geography is part of education. There are two-way arrows that link students, teachers, and school geography. That is, the three elements are in triadic interactions. Bo highlights that the interactions between students and teachers also influence school geography (shown as the tiny orange-yellow circle in Figure 6.2). Bo suggests that school geography can be a "seeding" process for some students who may study geography at the university level and then carry out "scientific research", which will affect the discipline.

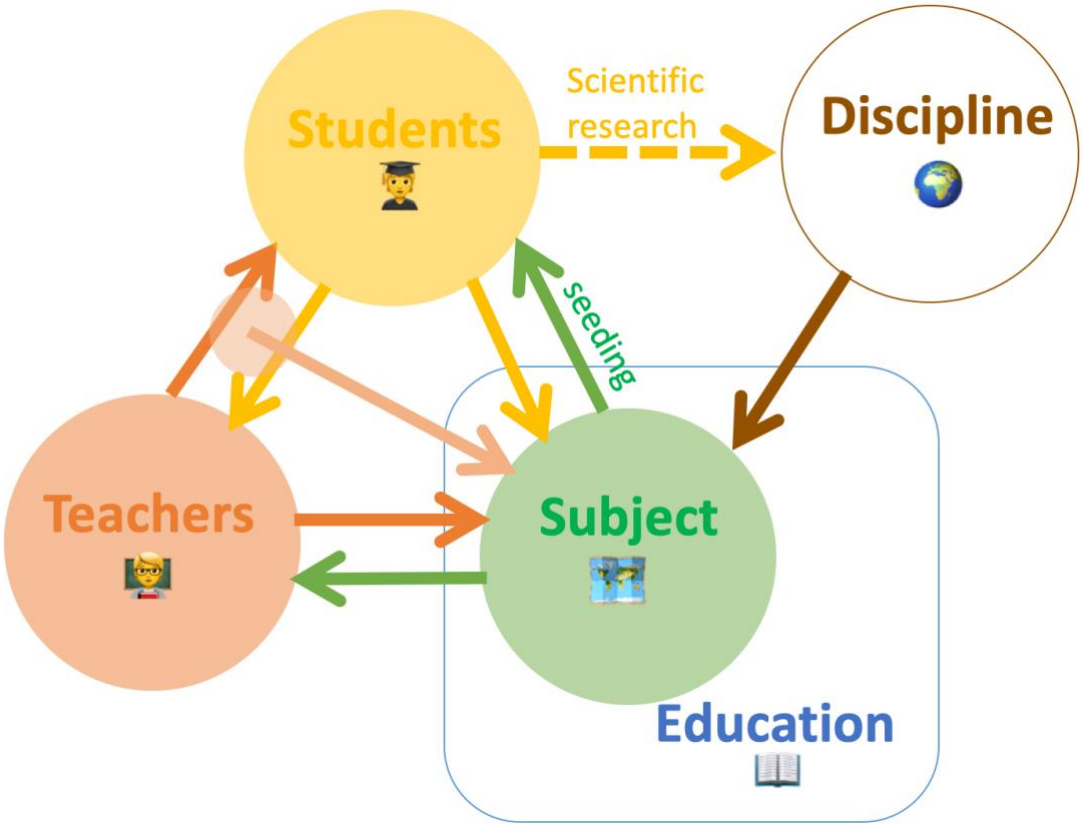


Figure 6.2 Bo's curriculum making diagram

Bo speaks highly of their students' socialisation process at school, highlighting students' "happiness" in developing new perspectives by spending time with their classmates. This observation suggests Bo is cognisant of the hidden curriculum's impact on students' school life and development. Regarding their role as a teacher, Bo uses "a guide" to describe their work: "teach students to learn geography" and "helped them to develop virtues like honesty". Bo's self-image has two dimensions: one is the subject specialist dimension related to geography, and the educator dimension valuing students' moral development.

- Cai (he/him): biography and diagram

Born and bred in Shanghai, Cai experienced the "3+1 Gaokao" with physics as his optional subject. Cai wanted to be a physics teacher, but he also filled in geography as the sixth choice in his university major applications form. Unexpectedly, he got admitted. Cai had considered different career pathways but figured that the employment market for geography graduates was "not wide". Thus, he looked for jobs in teaching. When he graduated, Shanghai was still in "3+1 Gaokao" mode, and schools had low demand for geography teachers. Cai's first job

was at a private lower secondary school in a suburban district. Later, Cai seized an opportunity to teach in his current state-owned secondary school in another district, closer to where he lived. Cai expressed gratitude toward his colleagues and district teaching-researcher officer who all supported and provided resources for him.

Cai conceived a nested view that education contains the discipline, and then the discipline contains the triad between students, teachers, and school geography (Figure 6.3). He emphasised that the student-teacher relationship was "interactive" rather than "subordinate". This interplay also took place regarding the third element: school geography. In Cai's words, they form "a triad": he "learns from" school geography and uses it to "deliver geographical thoughts and methods" to students; the students "gain knowledge and methods" from school geography and provided feedback to it, leading to its "constant revisions"; he not only "delivers knowledge, skills and methods" to students but also "receives inspirations" from students, which contribute to his own "growth".

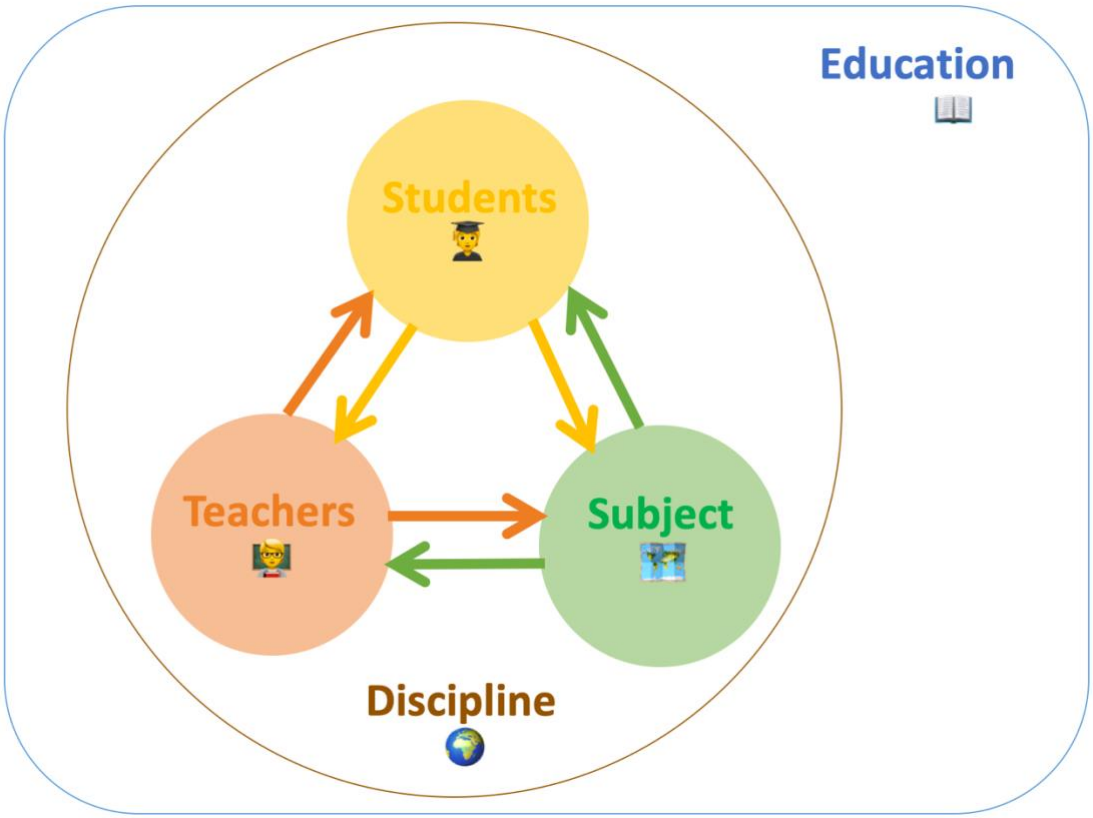


Figure 6.3 Cai's curriculum making diagram

Cai describes himself playing two roles in education, first: "a guide to students", then "a learner to oneself". He thinks he not only guides students in academic learning but also their

behaviours as decent human beings with “big visions”. Cai continues this analogy to describe his students’ role as “being guided”. However, he also gets eureka moments from students during the educational process, meaning that “students also guide” him, meaning it is interactive. In other words, Cai’s self-image has three dimensions: subject specialist, educator, and learner.

- Their similarities

Bo and Cai did not take geography seriously as school students nor consider geography teaching their top career choice in their applications. However, they both developed an interest in teaching during their school days. Now they both see themselves as “guides” who triadically interact with students and school geography. The triad resonates with the geography curriculum making model (Lambert and Morgan, 2010). It is also worth noting that both teachers value cultivating students as human beings with virtues, indicating a shared self-image of being both subject specialists and educators. The subsequent chapter will further explore and discuss their similarities and differences.

b) **Direct interactions:** student-teacher interactions unmediated by school geography

- Alex (she/her): biography and diagram

Alex was interested in humanities at school. Alex chose to study geography at university partly because her teacher told her it would include field trips. She graduated with a geography teacher certificate with a BSc degree in geography. During her undergraduate study, Alex developed a career vision in estate planning, hence, studied a postgraduate degree in human geography, and got a consultancy job. However, Alex quickly realised the overtime culture (always working until after 10 p.m.) in the consultancy job did not fit her schedule and left within a month. Alex first worked in a private secondary school before transferring to her current state-owned school, close to where she lived. However, due to pregnancy and maternity leave, Alex’s school did not allocate her any classes in the 2021-22 academic year. In September 2021, Shanghai schools started to teach geography based on the New National Geography Curriculum Standards and new textbooks based on the new standards. In mid-September 2021, Alex’s headmaster asked her to join the school’s project to develop school-based courses matching the New National Curriculum Standards and new textbooks.

Alex began the diagram-making process (Figure 6.4) by saying that school geography was an "important aspect" of the geography discipline. She then put the geography discipline within education. Afterwards, she positioned students and herself (teacher) in this nest. Alex put the student-teacher relationship "within" school geography and said "teaching and learning grow with each other" to describe their direct interactions.

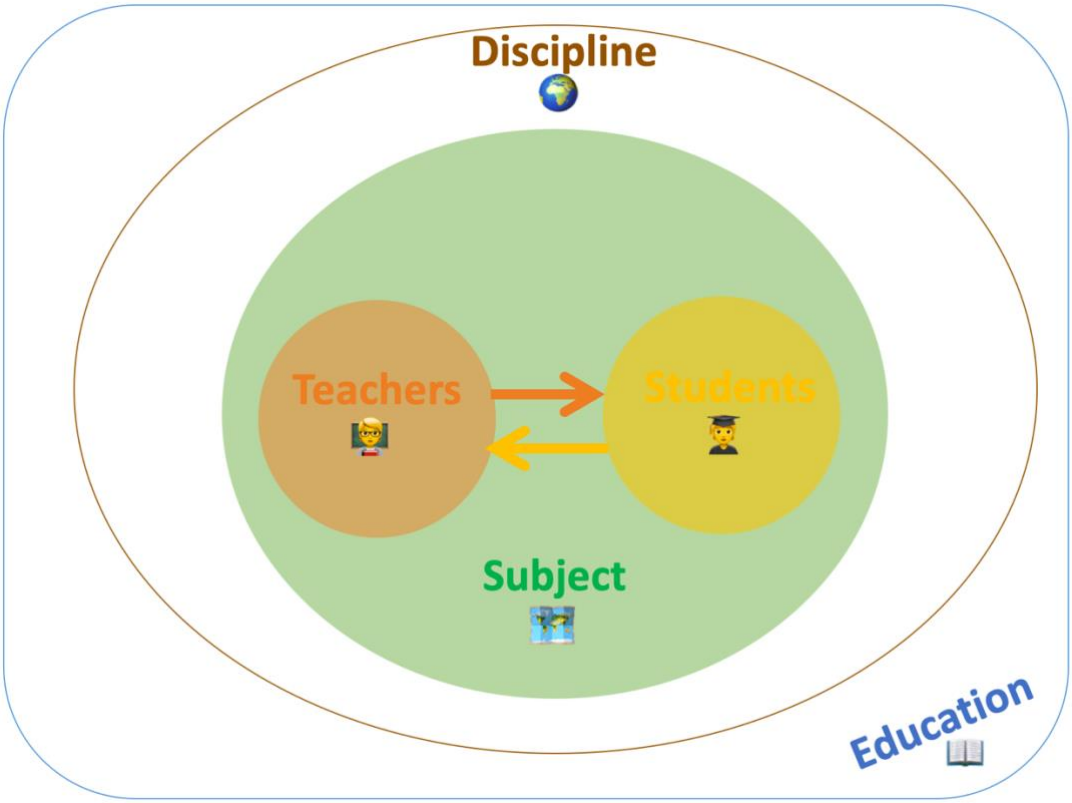


Figure 6.4 Alex's curriculum making diagram

Alex talks of "passing on an inheritance" to describe her role in education: "deliver (geographical) knowledge and classical theories to students". She insists that this delivery should not be "dogmatic" but meets the changing society's requirement for "innovation" and "practice". Alex says their students "first need to absorb the essence of the knowledge" and then "apply this flexibly" in future circumstances. In short, Alex sees herself as a deliverer of given knowledge but expects her students to put what they have learned into practice.

- Da (they/them): biography and diagram

Da was born and bred in Shanghai and chose physics as their optional "3+1 Gaokao" subject. Attracted by the "Urban and Rural Planning" major in the category of the Geography discipline, Da put it as a third choice and got admitted. The geography department did not

arrange specific majors in the first year. All first-year students studied together. From the second year onwards, students then focused on a specific major. Considering their employability, Da decided to major in Geographical Information Systems (GIS) instead. However, Da heard of scarce employment opportunities in their graduating year. As a backup, Da enrolled in a two-year Subject-Teaching postgraduate programme. It was unclear to Da whether this course included issuing the Geography Teacher Certificate. Da then sat the Shanghai Teacher Certificate Examination (STCE) in their first year to avoid the risk. Da found a job during their second term in the second year of their postgraduate programme and stayed there.

According to Da (Figure 6.5), the first step is to draw two equally sized circles representing the geography discipline and education. At their intersection sits school geography. Within school geography, students and the teacher interact with each other.

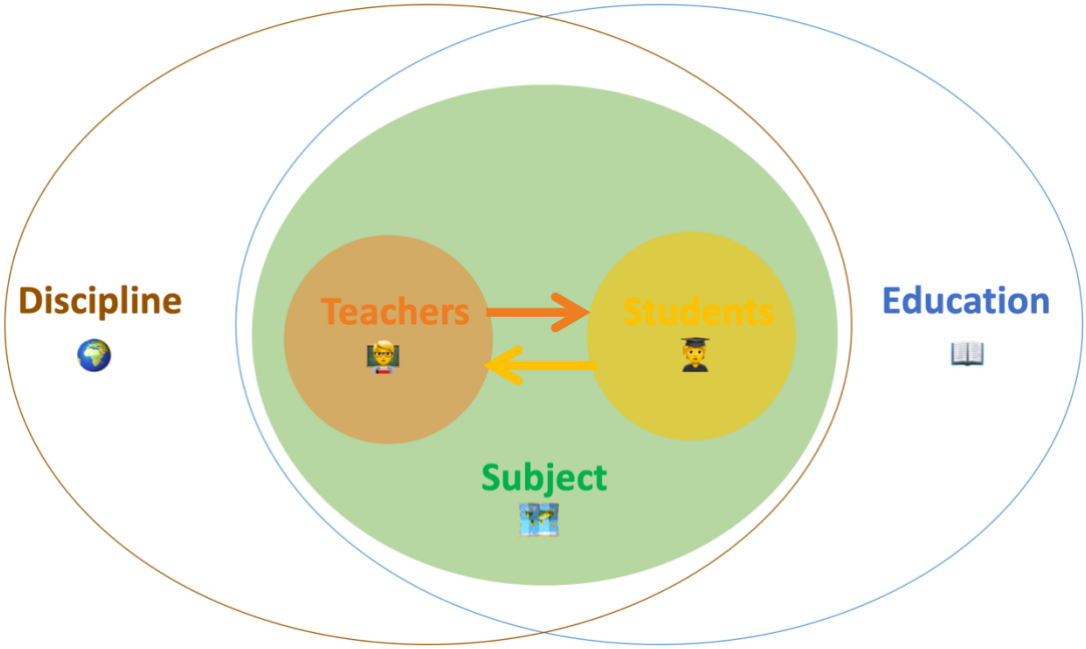


Figure 6.5 Da's curriculum making diagram

Da sees their role as "a guide" for students in both exams and values, echoing Bo and Cai. As for the students' role in education, Da thinks that most students only aim for the Gaokao, and only very few have a clear target to prepare themselves for future career aspirations.

- Their similarities

Alex and Da both picture direct student-teacher interactions within school geography. They both also perceived that the geography discipline contains school geography.

c) **Indirect connections:** students and teachers are mediated by school geography

- Eli (they/them): biography and diagram

Eli had been a science student at school but was unsuccessful in their university applications for sciences. Eli was reallocated to the "Urban and Rural Planning" major, which later became their first degree. Eli considered two postgraduate programmes. Their first option was the *Geographical Information System (GIS)* and their second choice was *Curriculum and Pedagogy (Geography)*. Considering the employability and their strengths, Eli chose the latter and came to Shanghai for their master's degree and studied for the Shanghai Teacher Certificate Examination (STCE). Around graduation, Eli considered working in their home province when looking for jobs, but they did not find any satisfying positions back home. They decided to stay in Shanghai as a geography teacher. Their first school was in downtown Shanghai. After the Reform, geography teachers were in demand. Eli changed to a suburban school where house prices were more affordable than in the downtown area.

Regarding the diagram (Figure 6.6), Eli's first instruction was to draw a circle with school geography, students and teachers, attributing the connection between students and teachers to school geography. In Eli's opinion, academic geography sits above this circle because school geography is based on it. Eli positioned education at the top level as they saw education as the "ultimate" purpose for the three elements in the circle.

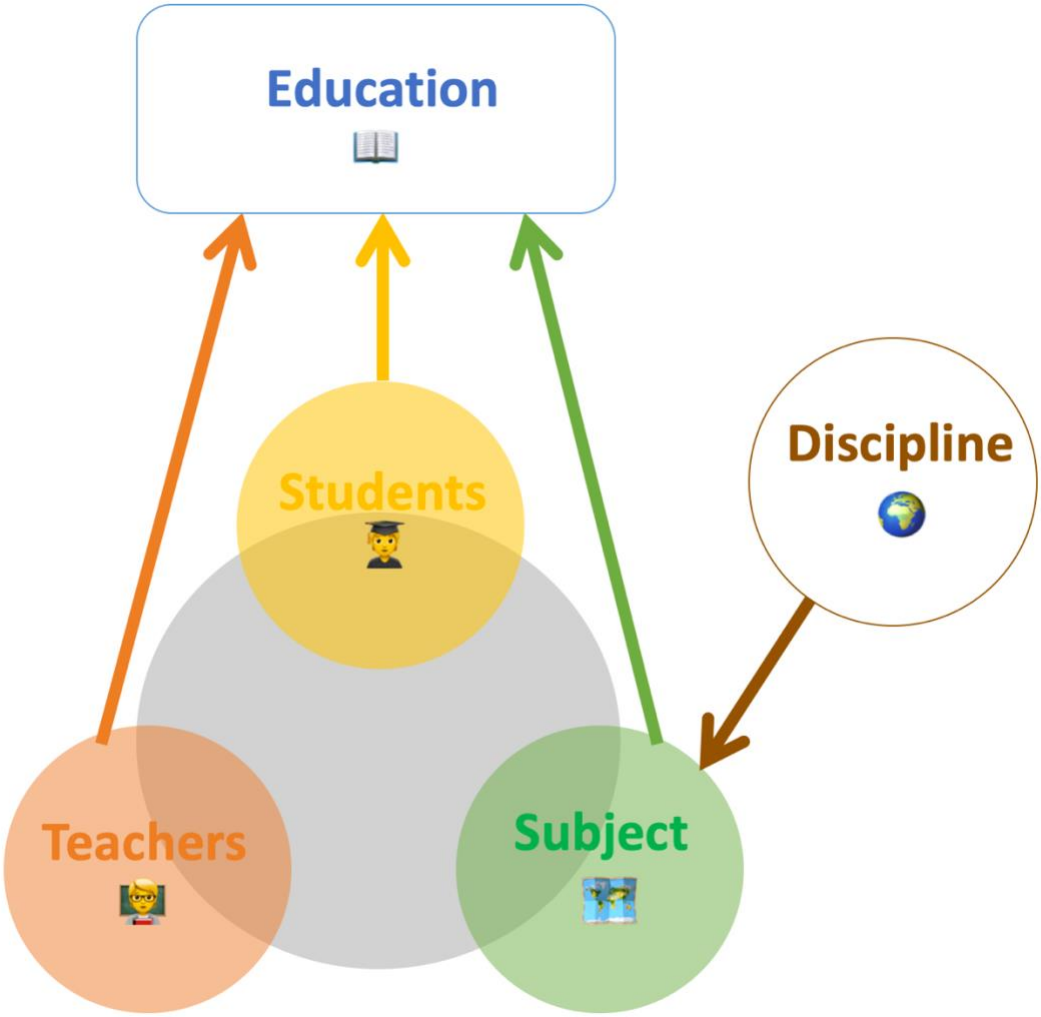


Figure 6.6 Eli's curriculum making diagram

Eli separated ordinary teachers and master teachers. Eli defied "the very few gifted" master teachers as "born with special passions", while they and "most classroom teachers were, in fact, knowledge transmitters" as "the ordinary majority probably had limited abilities". Eli's transmitter view recalls Alex's "deliverer" opinion. As Eli sees it, students are "realistic" as they know that only good scores can take them to prestigious universities. Therefore, the students would expect teachers to provide more help in improving their scores. Eli justifies their teaching to the test as a realistic choice to "survive" as an "ordinary" teacher, the same as the majority of teachers.

Summary of pre-Reform

The pre-Reform cohort shows three types of student-teacher relationships. Two teachers (Bo and Cai) think like a geography curriculum making model (Lambert and Morgan, 2010) that

sees the teacher-student-school geography in a dynamic triad. The other two (Alex and Da) portray direct student-teacher interactions unmediated by school geography but within it. Only Eli perceives that school geography connects students and teachers. However, as we will see, Eli's view is more common among teachers who entered teaching after the reform.

6.1.2 Post-Reform teachers' ideas of their student-teacher relationship

This section uses the same typologies of relationships identified in the previous section. However, it is noticeable that this cohort is less heterogeneous. While two pre-Reform teachers conceive the relationship as a dynamic triad, no post-Reform does so. Two pre-Reform teachers believe that students and teachers directly interact with each other, and so does one post-Reform. Conversely, only one pre-Reform teacher thinks that school geography connects students and teachers; three post-Reform teachers think this way.

a) **Direct interactions:** student-teacher interactions unmediated by school geography

- Hui (she/her): biography and diagram

Hui took her "3+1 Gaokao" with physics, like Cai and Da. Similar to Cai, Hui put geography as the fifth of her six choices. Hui was interested in Geographical Information Systems (GIS) during her undergraduate degree, and continued to specialise in cartography for her master's degree. She did not have any internship before graduating. Choosing to be a geography teacher suited what Hui expected in a job: a stable and relaxed environment with two long holidays. She attended the National Teacher Certificate Examination (NTCE) and qualified during her postgraduate years. She graduated soon after the "3+3 Gaokao" reform, which led to an increasing staffing demand for geography teachers. Hui found her first job and stayed there. In short notice, Hui's headteacher arranged Hui to teach Year 7 (student age 12-13) geography classes, in addition to Hui's Year 10 (student age 15-16) classes.

Hui started her instructions in drawing Figure 6.7 by saying that education is the overarching element containing the other four elements, and the geography discipline contains school geography. According to Hui, students and the teacher should be "side by side" and connected with two-way arrows. However, unlike pre-Reform teachers, Hui saw that school geography only intersects with the teacher, not the students. Hui requested to connect teachers with both the subject and the discipline, leaving students outside of both.

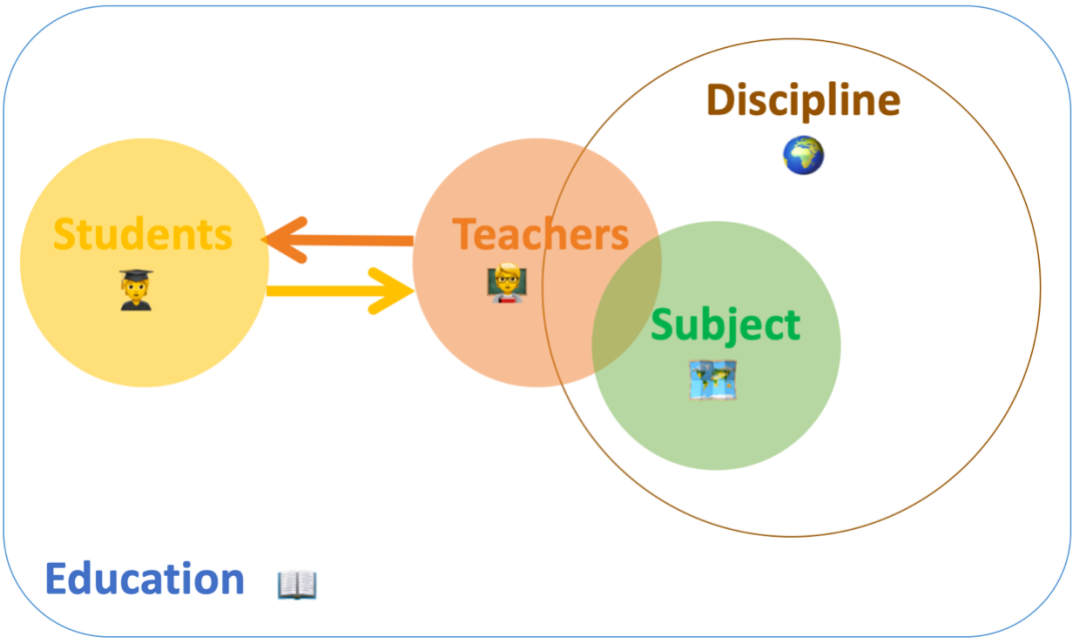


Figure 6.7 Hui's curriculum making diagram

In Hui's diagram, the students directly interact with teachers. However, compared to the two pre-Reform teachers who see student-teacher direct interaction within school geography, Hui holds a gatekeeper view that students only get access to the subject through the teacher. When asked about her teacher role, Hui positioned herself beside her students as an "auxiliary reference" and a "referee" for students in conflicts. Hui viewed that the primary role of students was "to be educated", recognising some "may enlighten" teachers "unintentionally".

b) **Indirect connections:** students and teachers are mediated by school geography

- Fay (she/her): biography and diagram

Fay enjoyed studying geography at school. Her mother encouraged her to add the teaching element to her university major. She, therefore, studied the *Geographical Science (Normal)* [20]undergraduate programme. Due to her undergraduate performance, Fay earned herself a recommendation to pursue a postgraduate degree at another university. She chose a university in Shanghai and studied human geography. However, Fay admitted her postgraduate motivation was more a result of not knowing what she wanted to do than by any real passion for the subject. Fay had two internships during her postgraduate: one in an international firm

[20] *Normal* here means teacher education, borrowing from French *école normale*.

and the other in a civil service section. They both turned out to be not what she wanted. Meanwhile, she home-tutored students and got familiar with school geography in Shanghai. Fay then actively seized an opportunity to work as a supply teacher. Fay once considered jobs in other cities, but in the end, she accepted an offer from a school in Shanghai.

To draw up Figure 6.8, Fay first suggested that a "big" box for education would contain the geography discipline and then proposed to add an element – secondary education – the same size as the geography discipline. Their intersection is school geography, which bridges students and teachers. Fay's subsequent instructions were to put students inside the secondary education box and teachers inside the discipline.

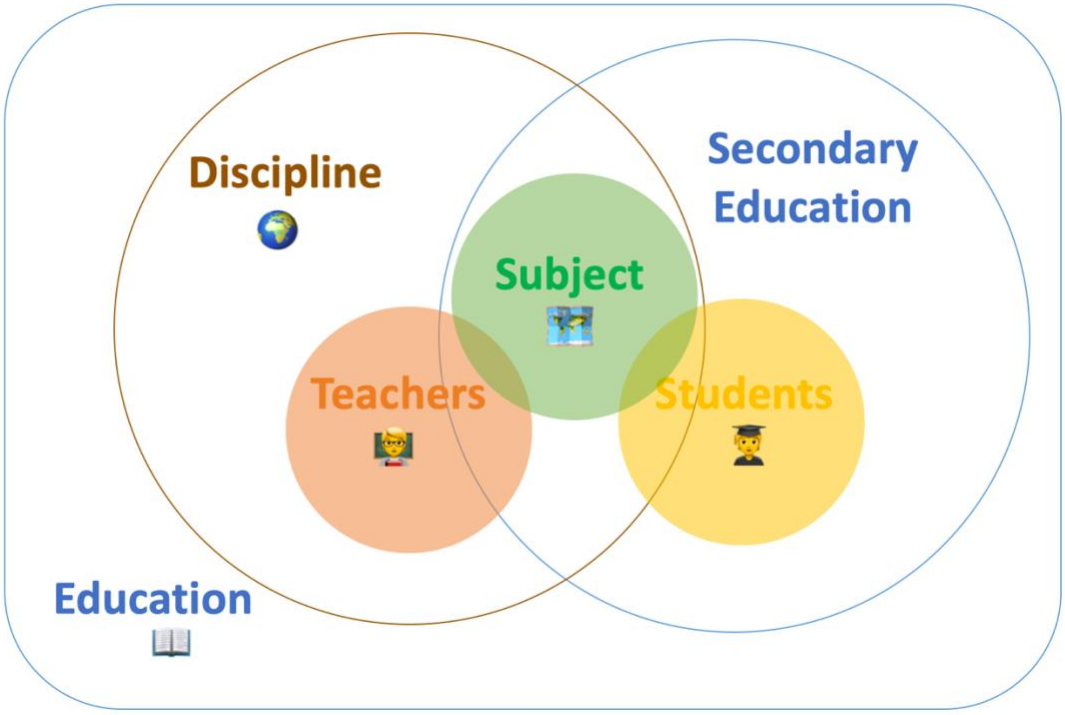


Figure 6.8 Fay's curriculum making diagram

Fay describes herself as a "guide and companion" and her students as "subjects and participants" in education. She would like her students to like geography and use "geographical eyes" to see the world. Fay referred to her previous school days and current class tutor duty to emphasise the significance of cultivating "correct values" for her students in spending money wisely and keeping optimistic attitudes. However, she also realised that students are human beings with their subjectivities. Consequently, teachers lead the way based on students' characteristics to "guide" students to participate in educational activities.

- Gal (she/her): biography and diagram

Born and bred in Shanghai, Gal took "3+1 Gaokao" with geography. Gal was determined to be a geography teacher, influenced by her secondary school teachers. One of them was her geography teacher in the upper secondary school. When filling in the major, she put *Geographical Science (Normal)* as her only choice in her top-choice university application. When Gal was enrolled, even Normal students who studied ITE needed to pass NTCE to get geography teacher certificates. Gal passed it. After graduation, Gal started to work in a state-owned upper secondary school.

Like Fay, Gal also started by describing education as "the biggest frame" in her drawing (Figure 6.9). Gal suggested putting students and herself (teacher) "within" education. Gal's subsequent instruction was to put school geography in and let it "connect with teachers and students". In the end, Gal described school geography as inside the geography discipline, which is also within education.

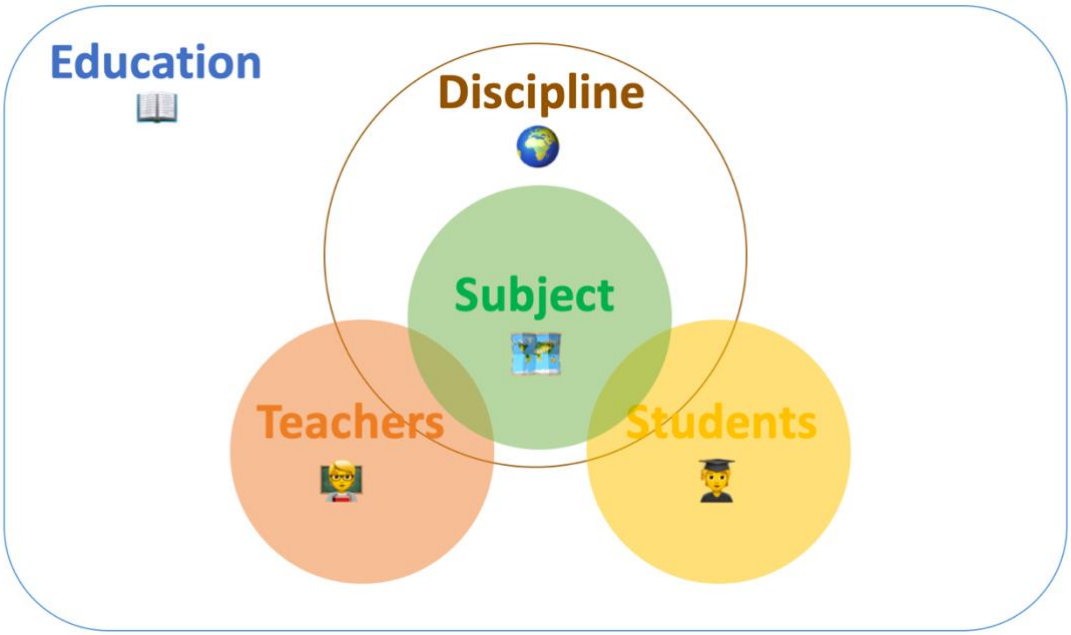


Figure 6.9 Gal's curriculum making diagram

Gal takes a humble position as a facilitator to "assist and push students forward to become a useful and meaningful being in the future". In Gal's judgement, teachers cannot "control" students from different situations to move in one direction. Gal would like to see her students contributing to society, but she can only assist and push them. She appreciates the two-way influences between students and teachers by noticing that students also help her to grow.

- Kit (she/her): biography and diagram

Kit was a science student at school but preferred to study university majors that combined humanities and sciences, hence putting geography as her second choice after psychology. She enjoyed her first degree and wanted to study a doctorate in demography. However, after two years in her three-year postgraduate programme, she found her research topic "boring" and changed her mind. She, therefore, took a part-time teacher role in her final postgraduate year. Kit did not mind being a teacher and sat the National Teacher Certificate Examination to qualify. At first, Kit considered finding a teaching job in her home province; however, she did not like the overly bureaucratic and complex recruitment procedure. Kit had a good experience working as a part-time teacher, so she decided to stay in Shanghai and managed to secure a job in one state-owned upper secondary school where she still worked.

Kit saw herself playing a role in connecting geography and education. She attributed her capability of teaching school geography to her geography degrees at university. She then gave instructions to draw her diagram (Figure 6.10):

> *I teach students to learn the geography discipline through the upper secondary school geography curriculum. Education is the process which puts the four all together.*

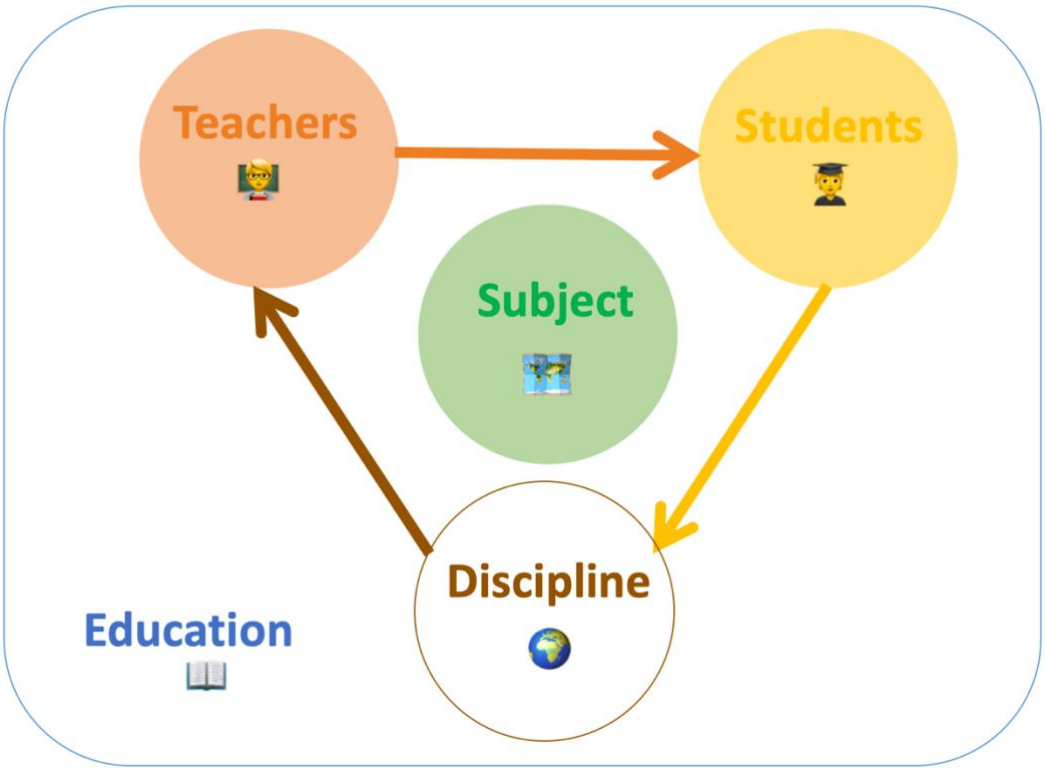


Figure 6.10 Kit's curriculum making diagram

Regarding her teacher role, Kit used an analogy of a mother and three-year-old kids to describe her current relationship with students. Hui refers to spoon-feeding as "forcing them to study". She then imagined the role she wanted to play: herself as "a tool person"; students would come to her when they needed the knowledge. She continued the analogy as a mother to teenagers who will return and ask for food. In Kit's experience, her students' attitude to learning is "like three-year-old kids" waiting to be fed. Kit expected to see more students becoming active learners who would take the initiative in their learning process.

Summary of post-Reform

The post-Reform cohort contains two types of student-teacher relationships. They mainly conceive that school geography connected students and teachers. Only Hui suggests direct interactions, yet she suggests that only the teacher had access to school geography. Three of the four post-Reformers envisage themselves as assistants to students. Fay is the only post-Reform teacher who sees herself as a guide, like three pre-Reform teachers (Bo, Cai and Da). Techers choosing "assistant" and "guide" to describe their role in education reflect different self-image. Assistant indicates a person is subordinate to another, in this case, teachers assist to support students' learning, while guide suggests a person with expertise and knowledge to advise others, that is, teachers advise and influence students' learning.

6.1.3 Conclusion of this section

Putting the two cohorts together, the pre-Reform heterogeneity and the absence of triadic thinking in the post-Reform cohort are in contrast to one another. While the former cohort has three types of student-teacher relationships (the ratio is 2:2:1), the latter cohort has two (the ratio is 0:1:3). Interestingly, the minority idea (1/5) of curriculum connecting students and teachers in the former cohort turns out to be the majority (3/4) in the latter. The teachers' self-images indicate King's (1993) distinction between the teacher as a transmitter (Sage on the Stage) and a facilitator (Guide on the Side). The notable difference is that three of five pre-Reformers view themselves as "guides" to facilitate, the other two pre-Reform teachers see themselves as deliverers, matching the transmitters. Post-Reform teachers all view themselves as either "guides" (1/4) or "assistants" (3/4), despite the difference, the post-Reformers' two self-images are both closer to the facilitator role than the transmitter role. In short, the pre-Reform cohort has more heterogeneity within their cohort than post-Reformers.

The above conclusion only describes an initial finding from nine teachers who participated in this study, five of them are pre-Reform teachers and four are post-Reform teachers. The interpretation should not be generalised to represent all pre-Reform and post-Reform teachers.

Regarding RQ1, both cohort teachers' diagrams evidently display that teachers conceptualise geography curricula and curriculum making in different ways. Their diverse views on student-teacher relationships relating to school geography express that the geography curriculum is not one thing commonly understood by everyone. Teacher diagrams show that 'geography curricula' are many things, which should be communicated in contexts. The pre-Reform cohort exhibits more variety and heterogeneity than the post-Reform cohort, suggesting the societal contexts matter in which teachers entered teaching matters. This finding is connected to RQ1 in two aspects: first, teachers' self-images are relevant to their conceptualisation of geography curriculum and their role in curriculum making; second, the cohort difference indicates that the different time teachers entered teaching may also influence how teachers perceive their engagement with the geography curriculum and curriculum making.

The discrepancy within cohorts and between cohorts are discussed more later. Although the correlations between cohorts are interesting, these are tiny samples. It is important to remember that the differences between participants within cohorts might be greater than the differences between cohorts. The individual cases are discussed more in detail under RQ2 and RQ3, but it is pertinent to mention that there is a cohort level different at this point, despite the impossibility of drawing more general conclusions from it.

6.2 Teachers' language regarding geography and education

Following the same structure, this section presents the two cohorts according to their diagrams' similarities in the language teachers use to describe geography and education. I unpack geography into two elements: the school subject geography and the academic discipline of geography. This study categorises their relationship based on the Stengel (1997) classification. She identified five possible relations between academic disciplines and their relevant school subject; two are evident in the previous teacher diagrams:

a) Continuous (the design of the school subject relies on the academic discipline))

b) Different but related: Discipline preceding (teachers who have acquired the disciplinary knowledge, transform it into school subject knowledge and connect the subject with students' lives)

It is important to point out that the two relations are not drastically different from each other, both acknowledging the discipline's significant influence on the subject. The former considers that the "school subject and academic discipline can best function as mirror images" (Stengel, 1997, p. 594), and the latter takes "the acquisition of subject-matter knowledge" (ibid, p.595) as the purpose of education and "school subject knowledge is a distillation of the accumulated knowledge of society as embodied in the academic disciplines" (ibid, p.595). The difference is their expectation of teachers' roles. According to Stengel (1997), the continuous relationship expects teachers to align the school subject closely with the academic discipline to borrow its prestige. The discipline preceding relationship expects teachers to connect traditional academic goals with their students' lives to acquire school subject knowledge.

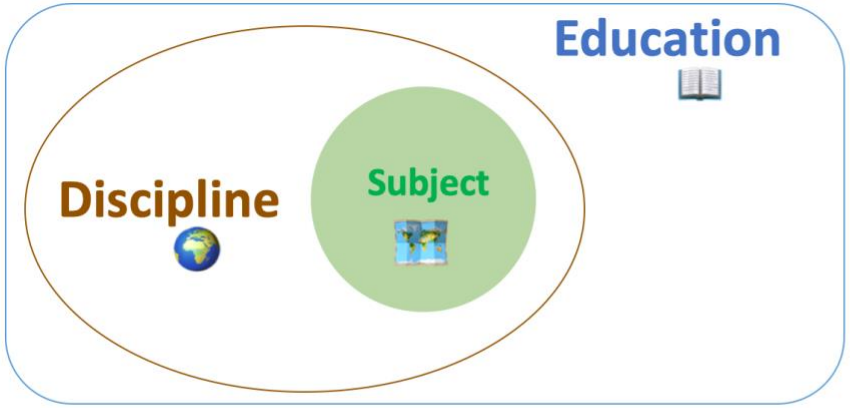
In teachers' curriculum making diagrams, "subject" stands for school geography, and "discipline" represents academic geography. This study extends Stengel's classification by bringing in the element of "education", enabling a clearer investigation into teachers' understanding of the relationship between geography (subject/ discipline) and education.

6.2.1 Pre-Reform teachers' language of the subject-discipline-education relationship

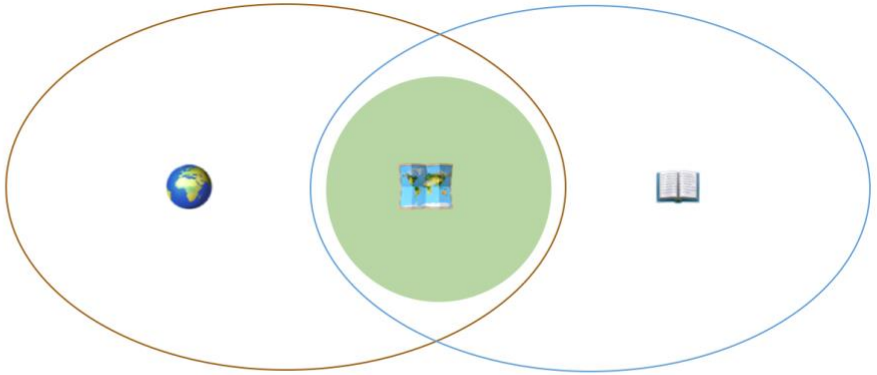
The pre-Reform cohort held heterogeneous views about positioning education and the relationship between subject and discipline (Figure 6.11):

a) (Discipline-Subject) Continuous
- Alex and Cai: Education contains the discipline
- Da: Education intersects with the discipline

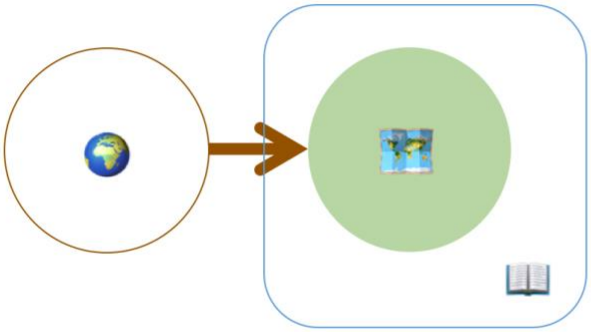
b) Different but related: Discipline preceding (the subject)
- Bo: Education as a practice of the discipline
- Eli: Education as the highest goal of the subject



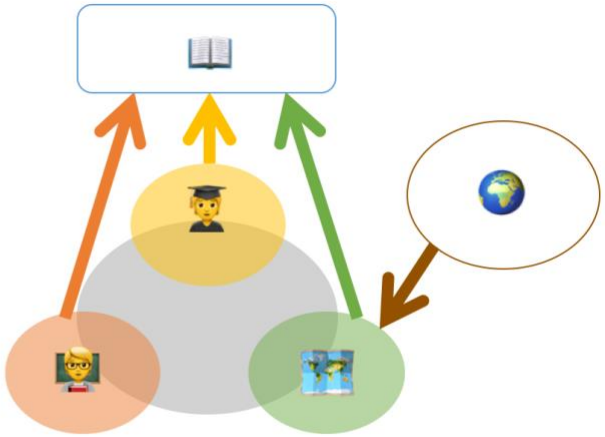
a) (Discipline-Subject) Continuous:
Education contains the discipline



a) (Discipline-Subject) Continuous:
Education intersects with the discipline



b) (Discipline-Subject) Continuous: Discipline preceding
Education as a practice of the discipline



b) (Discipline-Subject) Continuous: Discipline preceding
Education as the highest goal of the discipline

Figure 6.11 Pre-Reform teachers' view on the subject-discipline-education relationship

a) (Discipline-Subject) Continuous

- Alex and Cai: Education contains the discipline

Both teachers see the three elements in continuity (Education>Discipline>Subject). They both highlight "holistic thinking" in the subject's role in education. Alex uses "closest" and "extremely useful to students' lives" to describe the geography subject. Cai thinks the subject connects students' lives and geographical theory like a "glue". As for the discipline, they both rely on the discipline to provide the content for the subject. Alex talks about using the frontier research outputs as discussion materials in her classes. Cai values the discipline as a theoretical source for school geography.

Unlike their similarity in the subject and the discipline, Alex and Cai hold different views on the purposes of education. Despite sharing an overarching view of education in the diagram, Alex lists three levels of "cultivating humans" as the purposes:

- "from the national level, cultivate talents for the (Chinese Communist) Party who will contribute to socialism. This is the highest goal."
- "schools need to sufficiently satisfy students' needs by developing diverse school-based courses";
- the subject has its educational ideas, for geography it is now summarised as four core competencies.

Cai also points out the "social function" of education but spotlights that "students as beings" need education to "transform" learning into their "life-long growth". To sum up, both are cognisant that education is a social process, but their elaborations of its purposes reflect different teachers' self-images. Cai's ideas on education fits his self-image as a guide to students and as a learner to himself (see more in Section 6.1.1). In section 6.1.1, Alex uses "passing on an inheritance" to describe her role in education, "delivering (geographical) knowledge and classical theories to students" undogmatically to meet the changing society's requirement for "innovation" and "practice". Alex thinks her students "first need to absorb the essence of the knowledge" and then "apply this flexibly" in future circumstances. Even though cultivating talents and competencies do not seem the same as knowledge delivery, what Alex meant by undogmatic delivery resembled what Stengel (1997) described as teachers' transformation of disciplinary knowledge to subject knowledge.

- Da: Education intersects with the discipline

Da's diagram has two intersecting circles of the same size, representing discipline and education, with the subject at their intersection. Like Alex, "cultivating humans" was Da's first response to the purpose of education. However, unlike Alex, Da resisted the official discourse, recalled their schooling experiences, and proposed the subject as a "carrier" to the mastery of subject thinking. Initially, Da found it challenging to separate the subject and the discipline, which was a sign of viewing the discipline and subject as "mirror images" (Stengel, 1997, p. 594). Da brought forward "thinking and methods" as the subject's focus and presented the discipline with an emphasis on "human-environment coordination". In a nutshell, Da takes the subject as the 'child' of discipline and education as equal contributors.

- Their similarities in discipline-subject continuity

Alex, Cai and Da share a continuous discipline-subject relationship and put the teacher-student relationship within the discipline. They also appreciate subject thinking and refer to at least one of the four core competencies in the Chinese National Geography Curriculum Standards. They all trace back to the discipline as the subject's theoretical source, a sign of recognising the discipline's dominant role in designing the school subject.

b) Different but related: Discipline preceding (the subject)

- Bo: Education as a practice of the discipline

According to Bo, the geography discipline provides theories from education to practice. School geography (subject) is one approach to educational practice. Their educational ideas are learner-centred by referring to becoming "a better self" and "feeling more happiness and joy". Bo went on to talk about education in different forms beyond schooling. According to Bo, the image of education as "teachers teach in the classroom" is outdated. In response to the "digitalisation" in society, education also includes online teaching and learning. Bo notices that the pandemic has increased heavy reliance on communication technologies in the current information-based society.

In Bo's opinion, the discipline preceded the subject but does not necessarily override education. Bo notices that school geography's "units and chapters" correspond to university majors or sub-disciplines of geography. However, the discipline-subject connections are not as tight as they are supposed to be. Bo considers that the human-environment relationship is

vital in the subject's role in education, echoing Da. The difference is that Bo extends a geographical perspective to "appreciate" the world and a "responsibility" to improve it.

- Eli: Education as the highest goal of the subject

Eli considers that the discipline acts as a foundation for the subject. The subject forms a circle with students and teachers, all pointing towards the highest goal: education. Eli holds a self-image of an ordinary "front-line teacher" at the "bottom" of the education system, matching their transmitter role. To Eli, the most practical thing is to meet students' "high expectations" to improve their grades in the subject tests, rather than "the high ideals". According to Eli, schools evaluate teachers by their students' exam scores, which are "realistic", not an achievement in the "idealistic" subject competencies. In Eli's words, only very few talented master geography teachers are capable to spread the learning of geographical competencies in their classrooms, but most "ordinary teachers" like them cannot.

Nevertheless, Eli stresses the usefulness of the discipline and the subject by saying twice: "definitely useful". However, Eli is not satisfied with teaching the "over-simplified" and "inconclusive" geographical models and doubts students' interest in school geography. Like Bo, Eli studied sciences during their school days and ignored humanities. Eli compared subjects: "it (geography) is not like mathematics, physics, and chemistry, which can derive A to B then C to D". Eli has observed that their students also value more maths and science subjects to humanities (including geography) as the students think that only "the smart ones" are good at sciences. In brief, Eli still buys into the problematic sciences/humanities divide at school and seems fatalistic about teachers' abilities to carry out the purposes of education.

- Their similarities in discipline preceding and differences

Bo and Eli start describing their diagrams with the discipline, considering it as the source for the subject. Bo has moved on from being a science student at school to a geography teacher, appreciating geography and education's contribution to human development. Bo embraces their teacher role as a facilitator. However, Eli holds a transmitter role and remains cynical toward geography. Eli's view of education is also limited to students' test performance. Chapter 8 Section 8.1 will analyse why their views are so different.

Summary of pre-Reform

In general, the pre-Reform teachers started with a low opinion of geography owing to their school backgrounds as science students, but most started to appreciate geography. They all agree that the discipline precedes the subject in a continuity (3/5) or as a source (2/5). They position education in four different positions in their diagrams: education as an overarching element contains the discipline (2/5), education and the discipline at the same size and intersect (1/5), education as a practice of the discipline (1/5), education as the subject's highest goal (1/5). Most of them (except Eli) take education's purposes beyond tests, but they focus on different aspects of educational orientations. Chapter 7 and Chapter 8 will come back to their differences and will explore this further.

6.2.2 Post-Reform teachers' language of the subject-discipline-education relationship

Again, the post-Reform cohort holds a less heterogeneous view than their pre-Reform peers. All of the post-reform cohort sees education as an overarching structure which contains academic geography. In contrast, three of the four post-reform teachers adopted a continuous view of the discipline-subject relationship.

a) (Discipline-Subject) Continuous

- Fay, Gal and Hui: Education contains the discipline

These three teachers all conceive that education is the overarching element containing the other four elements and put the subject inside the discipline. Moreover, they also all take the view of "cultivating humans". Fay refers to shaping "the qualities of students" and subject competencies, referring to the official discourse. Gal lists three purposes, namely, students as individuals, the nation and society, and thinks education is to make them all "better". Hui says that education is to help students "master the correct way of being a human and behaving". Hui differentiates between them such that teaching is about "specific subject knowledge", while education includes "philosophy of life and values".

Despite sharing a continuous view, their different conceptions of education influence how they see the subject and discipline. Fay considers that the geography subject sits in the intersection between the geography discipline and secondary education. Gal views the subject as a technical work of "organising" and "delivering the knowledge", and the discipline as a more profound "comprehensive" scope with "intentions". Hui's thoughts seem more complicated than Fay and Gal's. According to Hui, the subject is too easy to learn. The

effortlessness resulted in students not taking it seriously. Hui also challenges the sciences/ humanities division at school, arguing that geography is too broad to fit in a binary division. Hui says some of her students have already noticed the subject's combination of humanities and sciences. As for the discipline, Hui recalled her university experience, which did not prepare her well for this teaching career. Hui raised her doubt on geography education in higher education as "geography does not cultivate professional talents who are universally recognised, and it (the geography discipline) is not very professional". The two teachers who studied undergraduate ITE generally accept the status quo, while Hui shows more scepticism in her reflection. Later in Chapter 8, I will analyse more about how Hui's scepticism influences her achievement of agency for curriculum making.

b) Different but related: Discipline preceding (the subject)

- Kit: Education contains the discipline

Kit put education as the overarching element containing the other four elements (discipline, subject, teachers and students), like the rest of the post-Reform cohort. The other similarity is that Kit also thinks education is to "make the educated better" in morality, worldview, philosophy of life and values. The difference is that she sees herself connecting students and the geography discipline. To Kit, because she learned the discipline, she can then teach her students to learn the discipline through the subject. During the interview, Kit asked for clarification on the difference between the subject and the discipline. As she saw it, part of the disciplinary knowledge forms the subject. Like Fay, Kit also did not elaborate on her ideas. A mismatch in Kit's conceptions of geography is noticeable. Kit first described discipline and education as "equal elements". However, Kit instructed me to draw education as an all-embracing nest in the diagram.

Summary of post-Reform

The whole cohort's diagrams view "education" as overarching, covering "geography discipline" and "school geography". They hold a positive view of education's purpose for individual development. As for the subject-discipline relationship, Hui's view is more sophisticated than the other three. In general, their thinking is in line with one another.

6.2.3 Conclusion of this section

It is worthwhile to note that this conclusion is based on nine case teachers, and only to describe initial findings from the nine cases. I adopt cohort as a category to describe the differences within case teachers, not to extrapolate a pattern for all teachers.

The two cohorts both relate the discipline to the subject. Six teachers (three pre-Reform, three post-Reform) take a continuous view. The other three hold the discipline preceding view (two pre-Reform, one post-Reform). While the pre-Reform teachers in this study are diverse in imagining four types of relationships between education and geography, the post-Reform cohort in this study takes education as the overarching element. Within the nine case teachers, the post-Reform cohort is more homogenous and less sophisticated in elaborating their understanding of the three elements. Regarding RQ1, it manifests a significant difference between the pre-Reform and post-Reform teachers in conceptualising geography curricula and curriculum making. Two possible factors may influence teachers' imagination of what geography (discipline/ subject) is for: their qualification routes or ITE experiences, and the time they entered teaching geography. Further analysis in Chapter 9.

6.3 Teachers' professional networks and curriculum making practices

To investigate the process of teachers' curriculum making practices, this study invited participants to talk about "their frequent sources to access to information about geography curricula they teach" (in the Phase 1 interview) and give examples of their previous teaching. This is where teachers mentioned professional development schemes: Professional Rank System, Teaching-researcher Offices and Master Teacher Hubs (see Section 2.3). The data suggest two different types of teachers' professional networking preferences in making the curriculum. The five teachers who studied undergraduate ITE (pre-Reform: Alex, Bo, Cai; Post-Reform: Fay; Gal) all appreciate diverse collaborations in professional networking, with their vignettes demonstrating agentic curriculum making. The other four teachers who studied postgraduate ITE (Pre-Reform: Da, Eli) or did not study teacher education (Post-Reform: Hui, Kit) were less enthusiastic in professional networking. They frequently mention exam-orientation in their teaching, but they were also capable of perform thoughtful

showcase lessons[21]. Hence, I categorise the nine teachers as: a) collaborative and agentic; b) performative and exam-oriented.

6.3.1 Pre-Reform teachers' professional networks and curriculum making practices

This section first presents how three pre-Reformers with undergraduate ITE background build and extend their professional networks, followed with vignettes as examples of their curriculum making practices, then a diagram for summation. The other two pre-Reformers with postgraduate ITE background are then presented in the same layout.

a) Collaborative and agentic

- Alex

Although Alex studied undergraduate ITE, she developed an interest in estate planning during her undergraduate years, studied a human geography postgraduate degree and worked as a planner before returning to teaching. Hence, Alex said she started with "knowing little about geography education" and took initiatives to understand geography education. First, Alex signed up for the entrance examination of a PhD programme in geography education. She did not get in, but sustained the connections with the professor and read their publications regularly. She also joined a Geography Master Teacher Hub (GMTH) and appreciated the guest lectures on textbook development and publishing. Second, Alex participated in a Massive Open Online Courses (MOOC) competition organised by a university, which influenced her to establish a public social media account. She uploaded recorded videos, known as micro-lessons (around 10 minutes), for students to watch at their convenience. She did the physical geography section herself and invited another teacher to do the human geography section. Alex also used this account to share her students' homework projects and past papers with her analysis. In both cases, Alex has shown her skills in building networks across different platforms from scratch.

Alex preferred preparing her showcase lesson mainly by herself instead of having the whole geography department hone one lesson. When she ran out of ideas, her solution was to search

[21] The showcase lesson is a free translation of gongkai ke (direct translation: public class). To distinguish it from everyday lessons, I translated it into a showcase lesson as it invites observers into the classroom. The observers are usually teachers and teacher educators, but not necessarily from the same subject area. There are different reasons for teachers to make one lesson a showcase: 1) personal reasons such as professional ranking promotion or taking part in teaching competitions, 2) a request from the Head of Department or their school leaders, 3) taking part in a professional learning community event organised by the local district teaching-researcher.

for published professional articles on the same topic she was preparing. That was how she got the idea of doing an experiment to simulate earthquakes in her showcase lesson. Alex said she used her showcase lesson to respond to what is recommended in the New Geography Curriculum Standards (MoE, 2017). According to her, question-led teaching should be set in story plots to be more engaging. Alex gave an example of what she meant by question-led. She put two apples from different regions to ask students questions on which one is sweeter and why. Students carried out experiments with apples, including observing, tasting and using brix spindles to test the sweetness. The design helps students to go from the apples at hand to study the climate where apples grow, which is a topic of *Agricultural Location*. The two examples both show that Alex absorbs resources from academia and daily life to enhance her classroom teaching. This indicates her curriculum practices connect research, textbooks and everyday life together.

- Bo

Bo's school is one of the top schools in Shanghai, which attracts teachers from all over China to visit, making their department a research hub for geography education. Like Alex, Bo also joined a GMTH outside their school. These master teacher hubs have different founders but invite similar guest lecturers. Bo finds the lectures "overly theoretical", contrasting with Alex's compliment. Bo speaks highly of the founding teacher of the GMTH who is down-to-earth and "generates research questions from daily lessons to lead the audience to think deeper". Bo also looks up to the founder as highly efficient in dealing with all sorts of things. Compared to the founder, Bo says they lack motivation when there is no deadline. When there is a due date, such as Gaokao and its mock tests, Bo is organised in preparing teaching and tutorials. But when there is no firm deadline, Bo tends to procrastinate doing tasks.

Bo uses the metaphor of "a concept car" to describe their expectation of a showcase lesson. This means that the lesson represents a thought-provoking prototype that contains cutting-edge academic research, but it is not commonly seen in daily classrooms. Like Alex, Bo also searches publications to prepare teaching, but Bo focuses more on academic geography rather than Alex's focus on geography education. During their participation, Bo was invited to teach a showcase lesson on *Urbanisation*. Bo downloaded academic articles on urbanisation and interviewed their university alums who worked in urban planning. Even for daily lessons, Bo has a habit of updating their slides every year before teaching. After each class, Bo presents a concise summary for students to review and reflect on. For Bo, it is important to prepare

students for the test, their emphasis is that students' abilities and geography competencies need to be improved in order to excel in Gaokao. Bo also intentionally introduced carbon emission calculators to students before teaching climate change by thinking calculating their daily footprint "can help students to form a sense of responsibility and an awareness of ownership (of the Earth)." Bo also recalled that they were impressed by students suggesting carbon burial below the sea floor to reduce carbon.

- Cai

Cai's professional network benefits from his induction year training in his current district. The district's teaching-research officer took the induction seriously and kept in touch with the teachers. They gave Cai an auditor position in their GMTH as an alternative to be an official member. Because the GMTH official members must have a medium professional ranking; Cai did not have one by then. After expressing his interest to a teaching-research officer, Cai got an apprenticeship to work with experienced teachers to propose simulative tests and Gaokao items. The exam-related work also leads to Cai's active engagement in online communication with geography teachers across China.

Cai also credits his school's cross-subject workshops, which introduced him to using mind maps as tools for teaching. Cai, therefore, gradually developed his own teaching style. Despite his diligent observations of the geography head in the first two years, he explored new ways of organising units and chapters in his classes. Cai presented his various mind maps to connect topics at the interview and also described one of his students as having drawn up one concept map connecting every topic in the geography textbooks.[22] Regarding the assigned topic climate change, Cai considered that "as a geography teacher", he should discuss the "mechanism" for "critical thinking" rather than go by the textbook cliché "global warming". He developed a case on "ice-storm" its impact on "plants and powerlines" to help students understand "the inner meaning of global warming is the updraft is stronger than before, which is more complex than a warmer weather".

- Their similarities and differences

[22] As I did not request for students' consent in my ethics form, Cai did not share the student's concept map with me. As an alternative, he gave details of the student's map in his words during our interviews.

The three teachers were expressive about their professional networks and curriculum making practices. Despite their different routes to get involved with GMTHs, they all gave positive feedback on their GMTHs. Alex and Bo mentioned academic and professional publications, but Cai's frequently used websites were about teaching and past exam papers. One possible reason is that Alex and Bo studied human geography postgraduates where they were trained to look for academic publications as literature review. Cai started working as a teacher after his undergraduate degree. His emphasis on exam is possibly related to his participation in exam item propositions. Alex and Cai showed initiatives in extending their beyond-school networks. They are active online to communicate with teachers in other parts of China. Bo designed their lessons based on academic geography articles and connections with professional geographers. However, it is vital to note that Bo's department as a hub attracts geography teachers from other schools in Shanghai and outside Shanghai to visit. In brief, they appreciate diverse collaborations and are agentic for curriculum making practices.

b) Performative and exam-oriented

- Eli

Eli said they preferred focusing on their teaching in their school rather than "explicit networking" with others. According to Eli, this preference was "because" their students were "relatively good" and required teachers to "provide more support" for students' Gaokao performance. When Eli said their students were "relatively good", they meant that their students entered their school with better academic performance than students in many other schools, but the students were not the top ones who had the best academic performance. As a teacher, Eli's experience was that their students expected "more support" from teachers to achieve better performance in their Gaokao. In section 6.2.2, we already saw that Eli considered the most practical thing was to meet "high expectations" from students to improve their grades in the Geography test. From this perspective, it is understandable that Eli viewed teachers and students from other schools as competitors in the Gaokao 'game', hence not being active in professional networking with others.

However, Eli was also a member in a Geography Master Teacher Hub. Unlike the previous three, Eli preferred their close circle, which consisted of their same-school colleagues and some university course mates. Eli called these people "friends" and attributed this preference to their personality. Eli gave an example to show the support from their friends. Eli needed to prepare a series of showcase lessons for the school leaders to observe before they evaluated

Eli's professional ranking application. Eli decided on the topics after discussing with their friends. Eli and their friends agreed that each showcase lesson for professional ranking should "tell a story" so as not to bore the observers with no geographical backgrounds. Eli's strategic move may be clever for their ranking assessment outcomes but not necessarily the best for students' learning. Although Alex also mentioned creating a story plot for student engagement (p.146), their intended audience differs. Teachers may both prioritise stories in their classes, but their motivations appear different.

A similar case happened in Eli's job interview in their current school. They thoughtfully designed a showcase lesson on *Population* to impress the employers. Eli used a shared bike[23] as a case study to talk about *Population Quality*, indicating that an everyday object can be a helpful lens to understand an abstract geographical concept. However, in the researcher-chosen topics, Eli's provided teaching materials were borrowed slides without removing their colleague's name from the file. When asked in the second interview, Eli took it for granted and said they often "exchange good materials" among their friends. That is, Eli had access to professional networks and knew what professional rank promotion expects teachers to act. Eli was able to perform differently according to different scenarios.

- Da

Da did not mention the influence of GMTH in their interview. However, Da appreciated their supportive department atmosphere in their own school, especially senior colleagues' generosity in sharing teaching materials. When asked about their inter-school professional development, Da mentioned that their district's teaching researcher was on sick leave, resulting in cancellations of their communal activities to exchange ideas and observe showcase lessons. Inside the school, Da said they went to physics colleagues for some inter-subject questions in physical geography. Da gave two reasons for them not being in touch with university peers: their introverted personality and their peers mainly work outside Shanghai. Da said, "We did not teach the same curriculum." According to Da, the long commute (an hour one-way) and parental care for children both required their time and energy. Nevertheless, in the first interview, Da expressed curiosity about the Reurbanisation process in London. Da said they first read it in an international A level textbook, now they

[23] Shared bike is scheme that allows users of a bike sharing app to rent their bike for a short time period.

also mentioned this concept to their students when teaching urbanisation. Da would like to know more from me about why Reurbanisation took place in London.

Da referred to past exam papers as crucial resources for teaching Year 11 in preparation for Gaokao. Besides the past papers, the WeChat[24] public accounts are what Da uses as resources. However, Da did not regularly check resources, Da tended to search things when they found that something might be useful for teaching. For example, when Da started to prepare to teach the topic of *Regional Culture*, they thought about using some of the comics on European history they read months ago to prepare their teaching. They knew the comics because their family were planning a trip to Europe. When asked to provide exemplars of their used teaching materials for this research, Da said that they preferred to use blackboard writing and hand-drawing maps to organise their teaching in daily lessons.

Climate was one of Da's favourite topics. Da chose to combine the *Monsoon* in Topic 10 with teaching the *Climate Types* (in Topic 9). Da justified this tailoring process by saying "teaching with climate types helped students to understand why the east coasts and west coasts of continents have different climates". In the first interview, Da also shared their plan to start a school-based course with a colleague in the upcoming semester. They both planned to take students to museums and do experiments to simulate geographic phenomena from September 2021. Later on, Da carried it out with the colleague and around 15 students.

- Their similarities and differences

Da and Eli have a closed-loop professional network with people they already know from work and university. Eli had more connections with university coursemates than Da. They identify themselves as introverted. While Eli appeared to be content with their networks, Da still wanted to widen their networks and resources but felt tied up. To sum up, Eli was in their comfort zone and did not intend to open up their professional network; Da could not find time to open up their network due to their workload at school and parental care at home.

Summary of pre-Reform

[24] WeChat (in Chinese: 微信, pinyin: weixin, literally: micro-message) is a Chinese instant messaging, social media and mobile payment app. Public account is one of WeChat's feature. Public account can push feeds to subscribers, interact with subscribers and provide them with services.

Overall, pre-Reform teachers show their capabilities in thoughtful design of either showcases or tailored topics. They all appreciate their schools' atmosphere and are content with what they have. Their confidence in classroom teaching is evident. The pre-Reform teachers again show heterogeneity within the cohort. Three teachers (Alex, Bo and Cai) who studied undergraduate ITE all chose to practise the curriculum with their well-established diverse professional networks and resources. The other two (Da and Eli) who studied postgraduate ITE seemed to be more tied to their school with an orientation on teaching-to-the-test. Both Da and Eli were aware of different ways to teaching, yet their working conditions do not seem to enable them to fully realise their potential.

6.3.2 Post-Reform teachers' professional networks and curriculum making practices

Unlike the pre-Reform cohort, the post-Reform cohort's professional networks mainly comprise their same-school colleagues. However, there are distinctions between those teachers who studied formal university-based teacher education (Fay and Gal) and those who entered the profession by completing the NTCE qualifying exam (Hui and Kit). The former group expressed more interest in their work and attempted to diversify their networks, while the latter seemed less interested in their work and more passive in extending their network.

a) Collaborative and agentic

- Fay

Fay, like Bo, benefited from her school as a research hub for geography educators. During Fay's induction year, the school also arranged a weekly visit to another school, where she had that school's most experienced geography teacher as an external mentor. While Bo learned much from their same-department colleagues, Fay noticed the office politics inside the geography department early on and tried not to get involved. When assigned a class tutor role, Fay felt relieved to move to the class tutors' office with no geography colleagues as office mates. Nevertheless, Fay kept an eye on opportunities for showcase lessons in other schools. In the second interview, Fay recalled that she recently drove an hour to observe one showcase lesson at another district in Shanghai and realised that only two other teachers from her district made it.

Fay carefully selected what to present in class, emphasising the content's "scientificity". To ensure validity, she referred to university textbooks, academic journals, and official websites.

Fay also frequently used WeChat's search function to look at "geography + call for papers" to inform herself about research frontiers recognised by academic journals and universities. This is how Fay keeps herself informed about the hotspots in geography education studies. In Fay's opinion, focusing on published articles ignores the time lag in academic publishing.

Fay shared two carefully designed showcases. One topic is *the Moon*, she started by students curating photo exhibitions of *the Moon* and connected to ancient Chinese poems appreciating *the Moon*. It showed inter-subject learning potential. She taught *Industrial Location* using the case of Shanghai's state-owned enterprise, Baowu Steel Group Corporation. She began with a fun fact about the daily currency, the one-yuan coin. The coin is made of metal produced by Baowu. Fay then created a WeChat group chat to simulate the process of selecting Baowu's new location. Fay searched the news to adapt what happened into the fictional characters' words. In summary, Fay starts from daily life and news to design her geography case studies.

Fay is a class tutor to Xinjiang students[25] and a geography teacher, making human migration an important topic. She is aware that her students mainly come from families who could not afford studying in Xinjiang for upper secondary schools. They could afford studying in Shanghai as most of the fees are covered by the government. When Fay taught human migration, Fay gave examples for students to judge whether the examples were migration or not, including "after graduation, move to Beijing and study in a university there" and "move to Guangzhou for work after graduation". Fay explained that she intended to put these forward-looking examples to help students "imagine" where they would go for university and where they would go for work. This example shows that Fay actively links the geographical learning to the students in front of her, which is not required by the Gaokao, but she feels that it is important for her to make this connection in her classroom.

[25] Xinjiang Uyghur Autonomous Region is in the North West of China, one-sixth the size of all of China. It took nearly 4000 km from Xinjiang's capital city Ürümqi to Shanghai, the eastern coastal city. Shanghai as one of the 12 cities in China that accept Xinjiang students from September 2000 (Ministry of Education, 2000). It is a political task to unite different ethnicities (Ministry of Education, 2000). Xinjiang students (most of them are minor-ethnicity students, mainly Uyghur) come to Shanghai for upper secondary education and live on campus during academic terms. In Shanghai, around 40 Xinjiang students form a Xinjiang class. According to the Ministry of Education (2000), the Xinjiang students studying in Shanghai go through the same Gaokao procedure like Shanghai students, but when applying to the universities, they had separate admission scores to study in mainland higher education institution. Geographers (Yuan, Qian and Zhu, 2017; Yuan and Zhu, 2021)and educators (Grose, 2019; Su, Harrison and Moloney, 2020) have studied the multi-ethnic encounter in implementing this dislocation of Xinjiang students. However, they are not the central topic of my study, hence I did not write in details, but provided references as examples.

- Gal

Gal was inspired to follow in her geography teacher's footsteps. She still keeps in touch with the school teacher who inspired her. Graduates of Gal's alma mater mainly work in lower secondary schools, resulting in Gal's lack of alum support. Gal's school has only had early-career teachers since Gal's arrival. Gal was close to the previous Head of Department for their passion for teaching geography, but they left in Gal's second year. Gal's school recently arranged an external mentor for the geography department, but Gal felt distant from them. Gal felt a similar distance when talking to her role model teacher and her district's teaching researcher, saying, "They are always teachers up there". In the interview, Gal made an upwards gesture. This distance is related to Gal's treating them as the expert teachers but herself as a student. The later Chapter 8 analysis will go deeper to discuss the hidden hierarchy in Gal's mind, describing them as "up there" and herself as an ordinary teacher.

Gal frequently uses social media and enjoys watching videos. Gal records herself doing revision videos by sorting out key concepts across topics. She uploads them to a video-sharing platform popular among teenagers. At first glance, it is similar to what Alex uploaded to her WeChat account. Nevertheless, Gal's video is more interactive as this streaming platform's feature is to allow comments to be added to the video. In other words, Gal's approach considers the audience more freely interacting with the streamers.

Gal is the only participant who shared showcase slides and supplementary documents. They contain her analysis of the textbooks and students, teaching and learning goals, difficult and important points, and teaching methods. The documents indicate her ITE background, as Normal Universities in China teach their students to write standardised lesson plans in a specific form. During the second interview, the new textbook was in use. The Earth's evolution process had its first appearance in the textbook. After observing someone else's showcase lesson using the five extinction events in the geologic time scale (GTS), Gal abandoned her original lesson plan and re-organised her showcase. In her new lesson, Gal uses four questions to lead the class and has students in four groups solve the questions. Gal shows her flexible adaptation skills. ~~Figure 6.19 provides a summary of where Gal informs herself about geography curricula and an example of her curriculum practice.~~

b) Performative and exam-oriented

- Hui

Hui felt "marginalised" in both professional communities and at school. She attributes this to her introverted personality, long commute (an hour's drive) and parental care for children. However, her description of her school environment also contributed to the marginalisation. Hui's school arranged for teachers to sit in big offices based on their students' year grades. Hui was the only geography teacher teaching Year 10 students and sat in the Year 10 office. As most same-office colleagues were also class tutors who were often out for meetings or in their classrooms, Hui felt left out. From September 2021, the headteacher also arranged for Hui to be a supply geography teacher for its affiliated lower secondary school. As a result, Hui spent less time in the office when she was at school, and felt "more marginalised".

Hui's two geography colleagues were not always available: one taught all Year 11 classes preparing for the Gaokao, and the other was busy managing the school in the leadership team. Hui was the one who made slides and shared them with the school leader who also taught one Year 10 class. Hui did not get much help. Hui's school did arrange a mentor on another campus for Hui to visit weekly in her induction year. However, Hui did not sustain the connection afterwards. Hui attributed this to her personality, yet it was notable that Hui's school did not schedule time for her to continue the regular visits after Hui's induction year.

According to Hui, she mainly accessed information about geography curricula through "WeChat public accounts" which provided "ready-made slides to be downloaded". Hui adapted slides for her use. Hui noticed that the ready-made slides had too many animations with effects. It took her time to remove the animations, but still consumed less time than making slides from scratch. In Hui's district, the teaching-research officer organises weekly teaching-research events in the format of showcase lesson observations, and changed to online during the COVID-19 era. In the first two years, Hui found showcase lessons very "useful"; but she has been more selective recently. When being asked what kind of curriculum resources support she would ask for, Hui said she wanted to know "exam requirement after the new (2021 Gaokao) reform". Even though Hui had curriculum standards and textbooks, Hui "did not know how deep" she should teach as she did not know "what would be examined", and "in need of a direction". It is clear that the depth in Hui's teaching is dependent on the test, hence her request for curriculum resources was based on examination. Hui narrows curriculum and her teaching to examination requirement.

- Kit

Kit is the only post-Reform teacher who sustained and used her university alums' network. Kit says that she does not like networking but fins it easy nevertheless. An alumnus recommended Kit to take part in a museum education project, where Kit led in developing geography elements for students to explore museums. Kit also sustains thriving interpersonal relationships within the school. The leaders also saw her managerial potential and assigned Kit to take charge of school-based optional courses. Although the admin work was against Kit's original aspirations to specialise in teaching, Kit knew she had to accept it. When being asked why, Kit gave an example where school leaders did not approve another colleague's professional ranking promotion application, as the colleague had not followed the administrative arrangements. Kit wanted to stay in this school and promote her professional rank, hence she did not want to go against the school leaders' arrangements.

Kit says she accesses curriculum resources through the municipal teacher training platforms which have recorded showcase lessons. Kit also downloads ready-made slides and adapts them for her classes, similar to Hui. Kit's habit is to first plan the sequence in her mind before looking for slides online. In the first interview, Kit said the textbook was her most important curriculum resource. Kit's slides showed that she added textbook page numbers on her slides to ask students to underline key points in their textbooks. When asked in the second interview, Kit said she had to do it in this "quick way"; otherwise, her students would not underline anything nor go back to memorise, thus her teaching would be "meaningless".

The showcase lessons provided by Kit indicate that she was capable of thoughtful design. In one case, Kit applied her expertise as a demography graduate to teach the topic of *the Chinese Population*, ending with letting students choose topics for further exploration as home projects. In another case, Kit's mentor recommended Kit to use the school's equipped sandbox to simulate terrain. Kit, therefore, chose *Contour Topographic Maps* as her showcase topic. Kit also got inspiration from other showcase lessons and designed hands-on activities for students to use play dough to make their versions of *mountains and contour lines*. Nevertheless, Kit admitted that the showcases are not what happens in her daily class due to a lack of time and energy.

Summary of post-Reform

The post-Reform cohort are all active online, either searching for resources or producing videos. They all expressed a lack of time to develop professional skills in teaching geography. Fay and Gal, who studied university teacher education, have taken up class tutor roles. Hui and Kit also have administrative workloads. The former would like more time to improve their teaching, while the latter want to have more time for taking a rest.

6.3.3 Conclusion of this section

Regarding RQ1, findings in this section show that nine case teachers' orientations to other people, geographical topics and work-life balance contribute to their conceptualisation of geography curriculum and curriculum making. Within the two cohorts consisted of nine teachers, teachers who received undergraduate ITE have more diverse networks than teachers who received postgraduate ITE or no ITE. Access to open networks enables the former teachers to appreciate geography curriculum more than exam-orientation. The five teacher who studied undergraduate ITE also explained their pedagogical designs more eloquently. They seem to have taken more initiative in curriculum making than others. Among these nine case teachers, most pre-Reform teachers live close to their schools (except Da) and keep an intentional work-life balance, while post-Reform teachers all express their work-life imbalances. The lack of balance between work and life among the post-Reform cohort indicate that the influence of Gaokao reform on the four case teachers. They seem to have less contact time with geography to think carefully on how they view geography curriculum and curriculum making, but being disciplined to teach for the test: Geography Gaokao.

6.4 Conclusions and Link Forward

This chapter introduced nine participant teachers with their brief professional profiles, conceptions of students, teachers, school geography, the geography discipline and education. Teachers' conceptions of how the five elements are related to each other is visible in the co-constructed diagrams and explanations, providing teachers' voice to conceptualise geography curriculum and curriculum making across nine case teachers. Table 6.1 puts the participants into two cohorts and uses the co-constructed diagrams to reveal the differences in teachers' conceptions of student-teacher and subject-discipline relationships. In both cases, the pre-Reform cohort's heterogeneity contrasts with the homogeneous post-Reform. Another finding is that in both cohorts, participants who studied undergraduate ITE all exhibit more passion in their curriculum practices and extending professional networks than others who

did not study undergraduate ITE. The following chapters will use geography curriculum making models and teacher agency theory to explore possible reasons behind the two cohort teachers' curriculum making practices.

Table 6.1 A summary of participants' conceptions and preferences

Cohort	Name	Student-teacher relationship	Discipline-subject relationship	ITE phase	Networking preferences and practices
Pre-reform	Alex	Direct interactions	Continuous	Undergraduate ITE	Collaborative and agentic
	Bo	Triadic interactions	Discipline preceding	Undergraduate ITE	Collaborative and agentic
	Cai	Triadic interactions	Continuous	Undergraduate ITE	Collaborative and agentic
	Da	Direct interactions	Continuous	Postgraduate ITE	Performative and exam-oriented
	Eli	Indirect connections	Discipline preceding	Postgraduate ITE	Performative and exam-oriented
Post-Reform	Fay	Indirect connections	Continuous	Undergraduate ITE	Collaborative and agentic
	Gal	Indirect connections	Continuous	Undergraduate ITE	Collaborative and agentic
	Hui	Direct interactions	Continuous	/	Performative and exam-oriented
	Kit	Indirect connections	Discipline preceding	/	Performative and exam-oriented

7 Links to the Lambert model in response to RQ2

This chapter compares the participants' curriculum making models explored in the previous section, with that offered by David Lambert. It starts by identifying where the pre-Reform and post-Reform teachers' diagrams align with the Lambert model and moves to point out the significant differences. This chapter elaborates on the Lambert model to account for the Shanghai context, answering the second research question (RQ2):

> *RQ2: To what extent do the Shanghai teachers' curriculum-making practices align with the Lambert model?*

Before comparing the models, this section briefly reviews the Lambert model (Figure 7.1), which explains that teachers accommodate the different needs of themselves, students and subject matter. The model starts with three circles representing teachers, students and subject matter (top left), and is developed to have these three pillars inside the context of the geography discipline (bottom left). Lambert, Solem and Tani (2015) proposed that the geo-capabilities approach is "a progressive form of discipline-oriented teaching within the context of broad educational aims" (p.725). That is, education is a broader context than the discipline of geography. Therefore, I simplified the Lambert model (see Figure 7.1 right): teachers, students and subject (geography) are three intersecting circles inside the context of the discipline of geography; education is a broader context of the discipline-oriented teaching. The coloured diagram simplified the Lambert model to be more readily compared with the diagrams produced by participant teachers. To show education as broader context of discipline-oriented teaching in the diagram, the simplified model added education as a circle containing the discipline. I am aware that this visual simplification without explanation could be interpreted as education is 'bigger' than the discipline. However, the presence of "education" and "discipline" in the simplified Lambert model means to describe that the discipline-oriented teaching is within a broader context of education, rather than describing education's relation to the discipline,

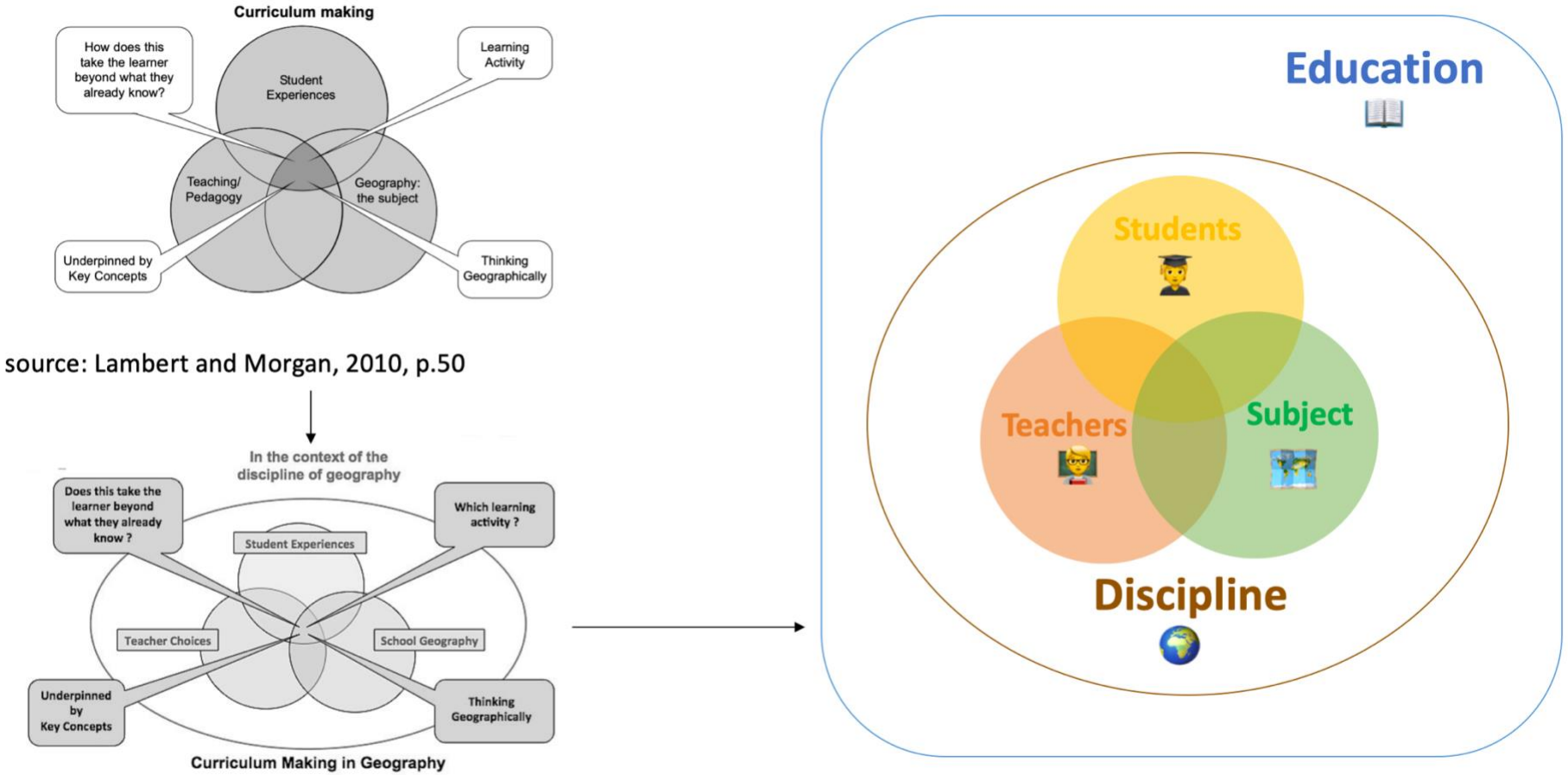


Figure 7.1 A timeline of the Lambert model ending with my simplification

7.1 Participants' similarities to the Lambert model

This section identifies where teachers' diagrams align with the Lambert model by considering teachers' views on (1) student-teacher-subject relationship and (2) discipline-subject relationship. The section will look first at the pre-Reform cohort and then the post-Reform cohort for ease of reference. It will end with a cross-cohort conclusion.

7.1.1 Pre-Reform cohort – similarities to the Lambert model

The pre-Reform teachers' diagrams are remarkably similar to the Lambert model in both (1) the student-teacher-subject relationship and (2) the discipline-subject relationship. These teachers do not know who Lambert is, but their ideas happened to align with the Lambert model, despite working a different context. This tells us something about the value and applicability of the Lambert model. Figure 7.2 will show the student-teacher-subject relationship in comparison by putting elements extracted from the adapted Lambert model and teacher diagrams together. The Stengel (1997) classification (first introduced in section 3.2.1 p. 42) reappears here to describe the relationship between discipline and subject.

(1) The student-teacher-subject relationship

All pre-Reform teachers' diagrams have similarities with Lambert's model in student-teacher-subject relationships. Lambert (left in Figure 7.2) illustrates the relationship between students and teachers in triadic interactions with the subject (school geography). In two cases (Bo and Cai), the triadic interactions align very clearly; in one case (Eli), the indirect interactions resemble part of the triad; in the other two (Alex and Da), the three features are present, but the student-teacher relationship is unmediated by school geography.

Although lines are generally used rather than overlapping circles, Bo and Cai outline triadic interactions among teachers, students, and the subject (see Figure 7.2). The circle formed by the subject, teachers, and students (see Eli in Figure 7.2) also echoes the connections shown in the Lambert model. Even for the less similar type (see Alex and Da in Figure 7.2), the direct interactions between students and teachers still partially reflect student-teacher interactions shown in the Lambert model.

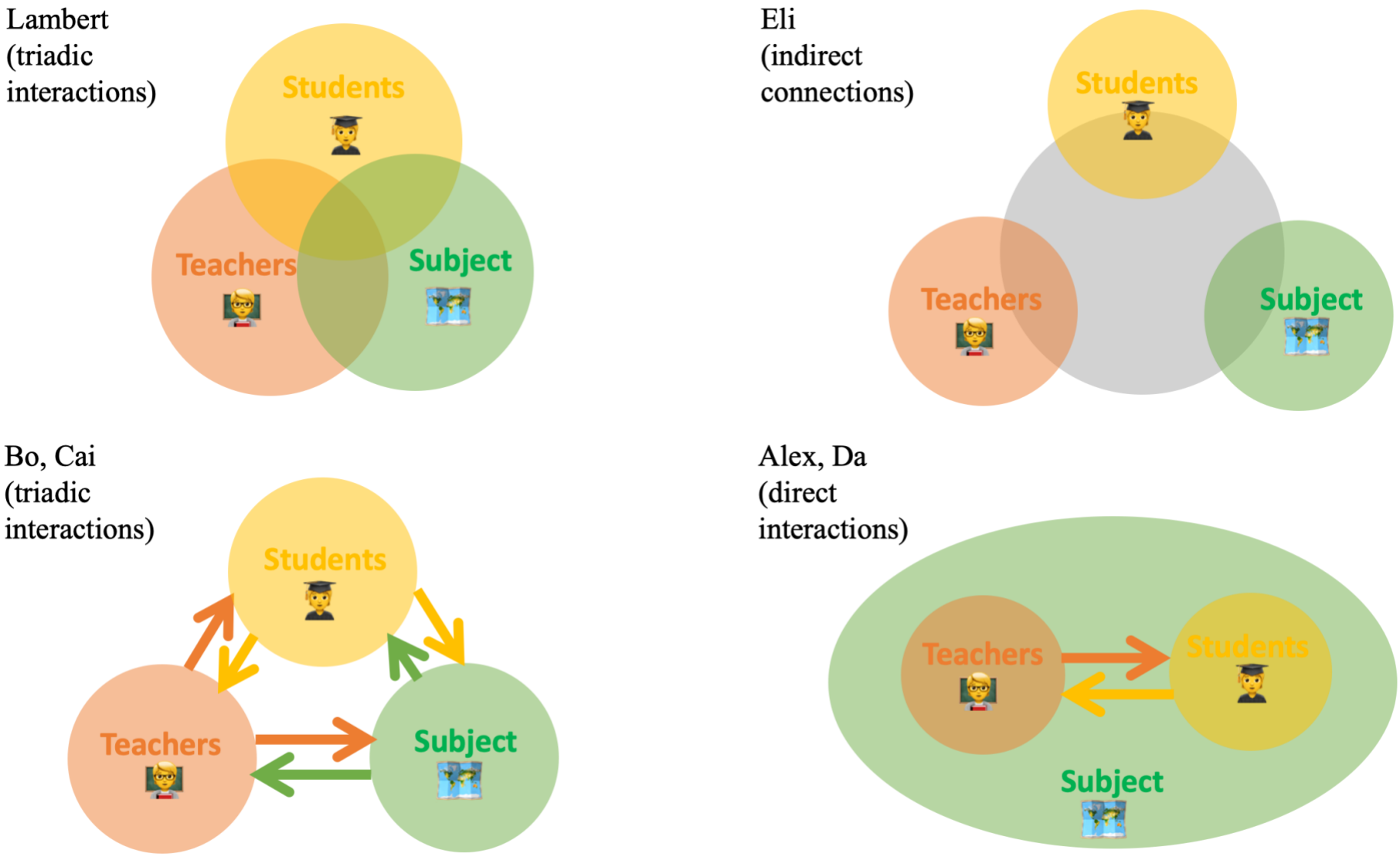


Figure 7.2 Student-teacher-subject relationships in the Lambert and pre-Reform models

(2) The Discipline-subject relationship

All pre-Reform teachers' ideas happened to align with Lambert on the disciplinary influence on school geography. Stengel (1997) imagines two possible discipline-dominating views in discipline-subject relations. One is continuous, which means the subject is indistinguishable from the discipline. Lambert puts the discipline of geography as the context for school geography. In doing so, he aligns with Stengel's continuous view that school geography is not distinguishable from academic geography, as do three pre-Reform teachers' diagrams (Alex, Cai, and Da). These three also exhibit a discipline-subject continuity by drawing the geography discipline containing school geography.

Stengel's (1997) other view is "different but related: discipline preceding" (p.59), which is very similar to the continuous view regarding the influential discipline. The slight difference is that the preceding means the school subject is distinguishable from the academic discipline, viewing the school subject as a "distillation" (ibid, p.59) of the discipline. The other two pre-Reform teachers' diagrams display the discipline-preceding view (Bo and Eli). It is vital to notice that both discipline preceding and continuous views agree that school geography is a simplified version of academic geography. In other words, both Lambert and the pre-Reform cohort take the view that school geography comes from academic geography.

7.1.2 Post-Reform cohort – similarities to the Lambert model

The post-Reform teachers' diagrams are less similar to the Lambert model in (1) the student-teacher-subject relationship but more similar in (2) the discipline-subject relationship.

(1) The student-teacher-subject relationship

While the pre-reform cohort showed conceptions of the student-teacher-subject relationships which align with the Lambert model, the same cannot be said for the post-reform cohort. The similarity is that Lambert and post-Reform teachers all agree that students and teachers are connected. Lambert describes this student-teacher connection as direct interaction, which also appears in one of the four post-Reformers' drawings (see Hui in Figure 7.3). Nevertheless, Hui's diagram shows that students only access the subject through teachers, contrasting with Lambert's co-constructive triad.

The other three post-Reformers resemble Lambert in both subject-student and subject-teacher relationships (see Fay, Gal, and Kit in Figure 7.3) but not in triadic interactions. Their linear view of the subject connecting students and teachers through transmission partially resembles the subject interacting with teachers and students in the Lambert model. However, it is not mirroring Lambert's co-constructive feature. Section 7.2 elaborates on the differences. This section points out that the post-Reform teachers view teaching as transmission in which the subject is transmitted between teacher and student, which is suggested by part of Lambert's model.

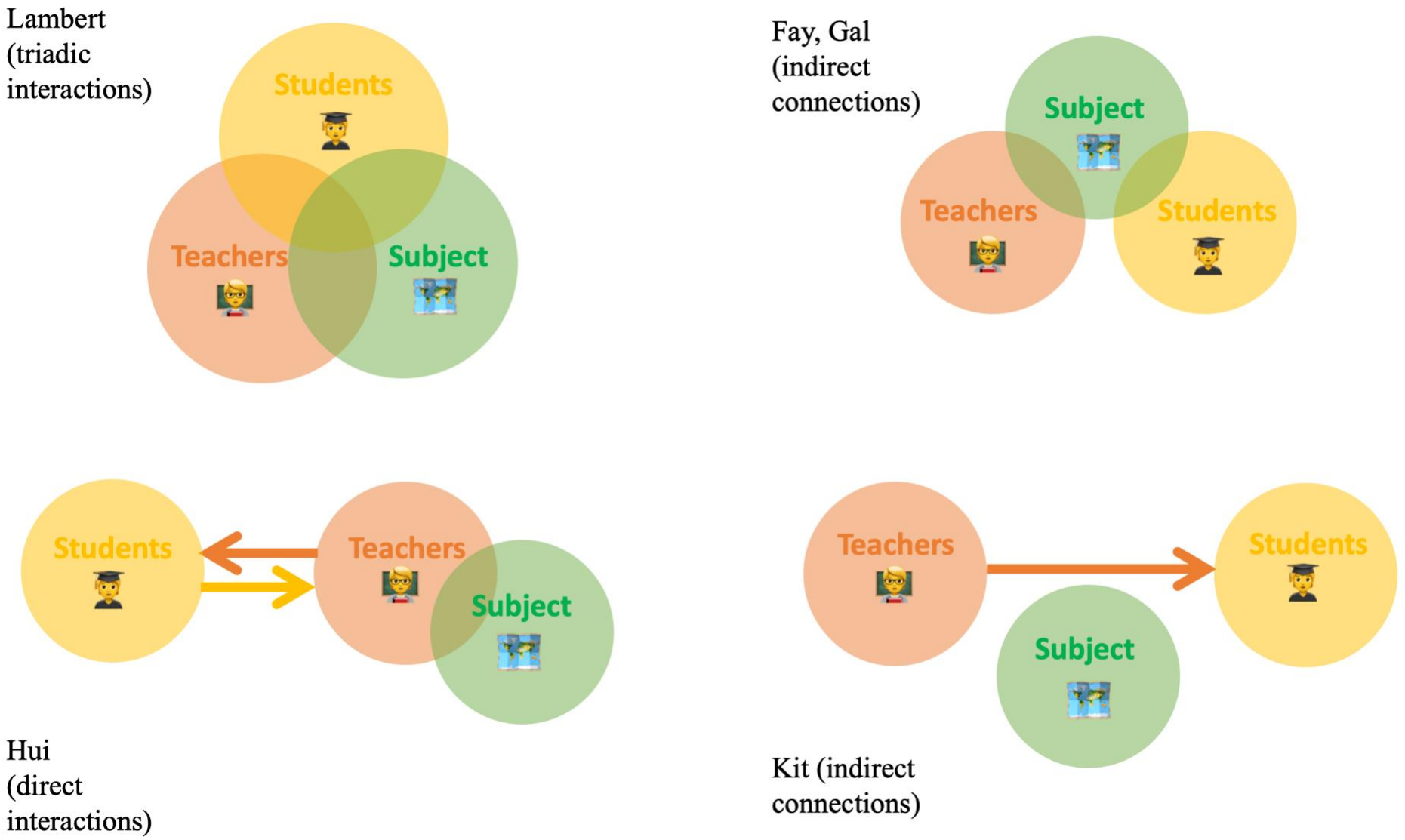


Figure 7.3 Student-teacher-subject relationships in Lambert and post-Reform models

(2) The discipline-subject relationship

Just as the pre-Reform cohort showed conceptions of the discipline-subject relationships, which align with the Lambert model, the post-Reform cohort also agrees with Lambert on the disciplinary influence. The Lambert model suggests a continuous view between the discipline and subject, as do three of four post-Reform teachers (Fay, Gal and Hui). Moreover, they also align with Lambert by viewing education as the overarching element which contains the discipline-subject relationship. The only post-Reform teacher who sees the discipline preceding the subject (Kit), also agrees that education is the nest for the other four elements. In short, like the pre-Reform cohort, the post-Reform cohort also sees school geography as a simplified version of the geography discipline. They also agree with Lambert that the geography discipline is part of education.

7.1.3 Conclusion of this section

Both cohorts have some resemblance to the Lambert model. Regarding the student-teacher relationship, the pre-reform cohort shows a homogeneity to the curricular co-construction between students and teachers that Lambert imagines. In contrast, the post-reform cohort adopts a more simplistic view that the relationship between student and teacher is based solely on the transmission of knowledge. As for the discipline-subject relationship, the similarity between Lambert and the two cohorts is that school geography is a simplified version of academic geography. The post-Reform cohort also agrees with the Lambert model by suggesting that education is the overarching element in the curriculum making model. In this study, it is important to notice that Lambert and these Shanghai geography teachers share some common conceptual relationship understandings in curriculum making.

7.2 Differences between Shanghai teachers and the Lambert model

This section presents differences in the student-teacher-subject and subject-discipline-education relations. It is important to remember that the Lambert model is a theoretical model of curriculum making, while those that the teachers create represent their curriculum making in real-world contexts. Given this, it is unsurprising that there are significant differences between the Lambert model and participant teachers' diagrams.

7.2.1 Student-teacher-subject: Co-construction in Lambert VS Linearity in Shanghai

While Lambert considers the student-teacher-subject relationship in triadic co-constructive interactions, six of nine teachers consider the process as linear transmission (Figure 7.4), two of whom are pre-Reform teachers (Alex and Da). Alex and Da put student-teacher interactions within the subject, rather than triadic interactions in relation to the subject. The four post-Reform teachers (the whole post-Reform cohort) either take the subject as the transmission medium between them and students or consider the teacher as students' only access to the subject. To put it in another way, the six teachers do not consider themselves working with the subject but working for or in the subject. The Shanghai teachers' diagrams imply a hierarchy and linear transmitting relation. In short, Lambert's intention of viewing the three features as equal contributors to teachers' curriculum making process does not align with most Shanghai teachers' visions.

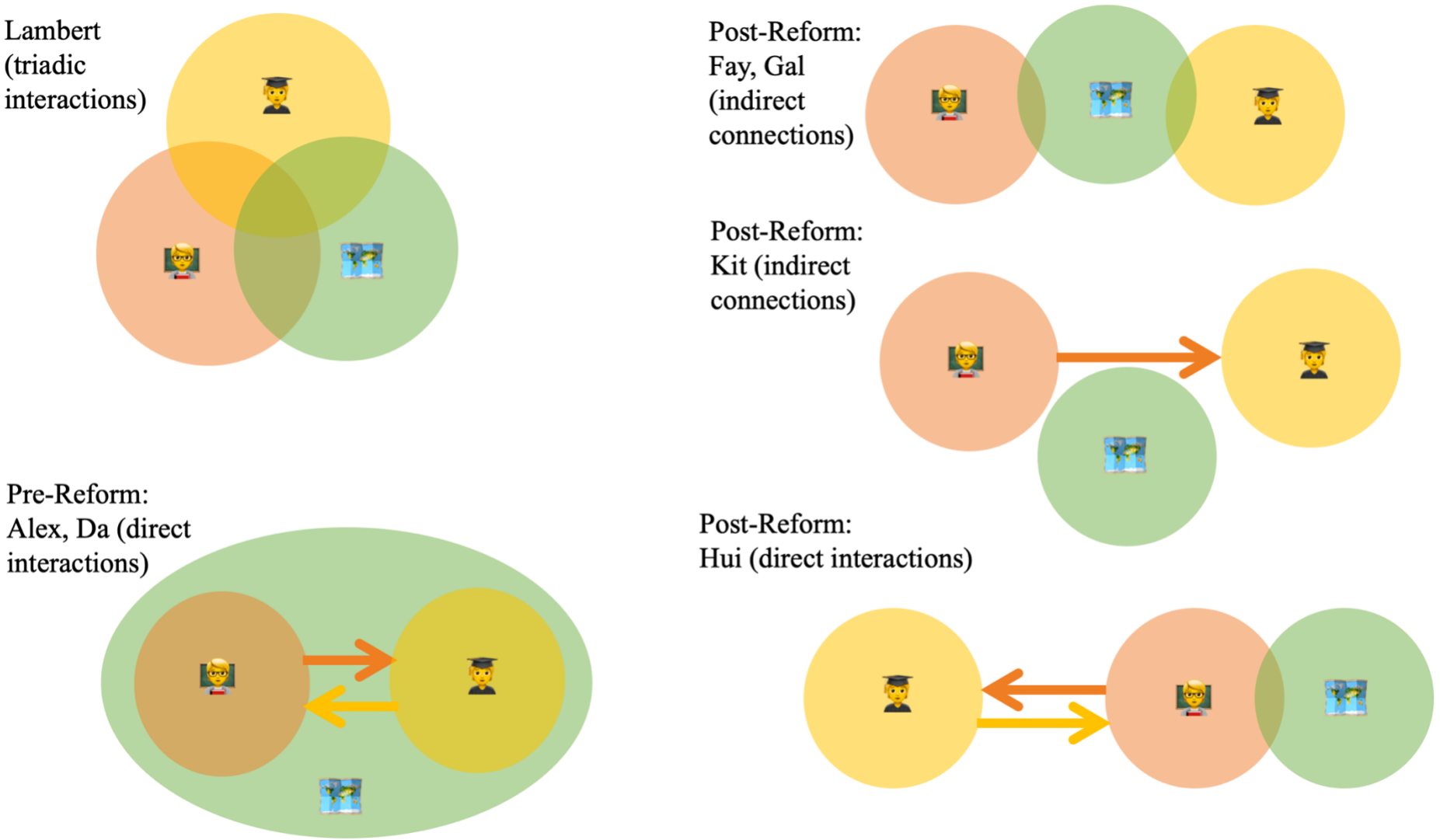
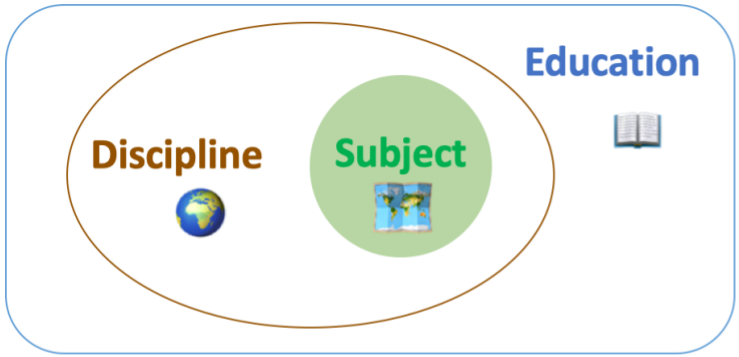


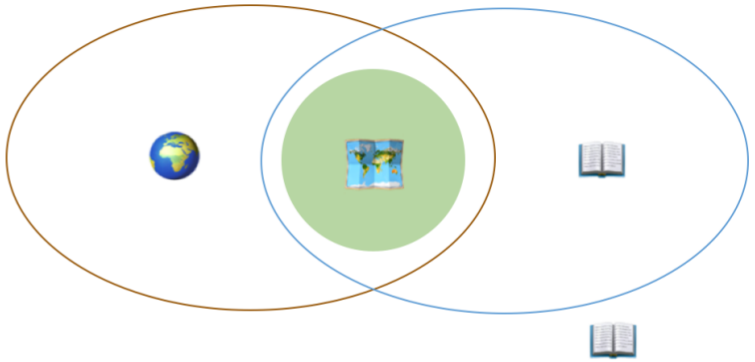
Figure 7.4 Student-teacher-subject Differences between the Lambert model and Shanghai teachers' diagrams

7.2.2 Subject-discipline-education: Nest in Lambert VS Diversity in Shanghai

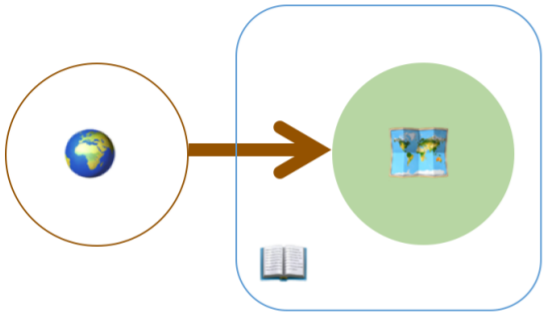
The difference between Lambert and teacher diagrams regarding the subject-discipline-education relationship is that four teachers do not agree with Lambert's nested view of "education>discipline>subject" (see Figure 7.5). Three of them are pre-Reform teachers; the other one is from the post-Reform cohort. In the pre-Reform cohort, Bo starts from a disciplinary beginning and considered education as one way of practising the discipline. Da suggests that education and discipline are equal intersecting circles, subject being their co-construction. Eli does not consider the discipline is directly related to education. Eli considered education at the top level as the ultimate purpose for the subject and put the geography discipline above the subject, but below education. The post-Reform teacher Kit puts school geography as the central medium to run the teacher-student-discipline cycle. In contrast with the previous subject-teacher-student relationship, Lambert's nested view hints at a hierarchy, but Shanghai teachers propose more diverse ways to understand the education-discipline-subject relationship.



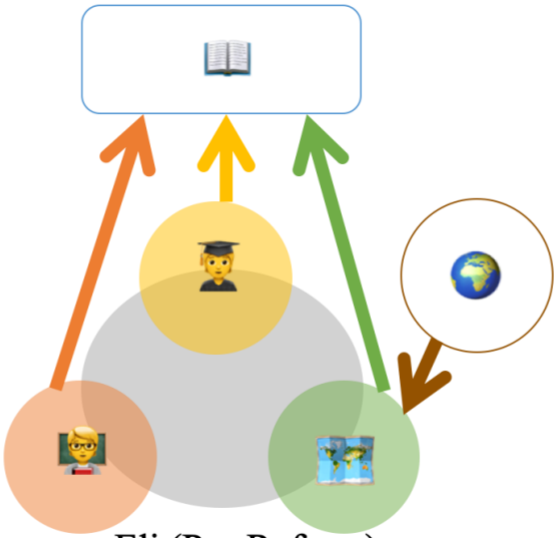
Lambert: education> discipline > subject
Alex, Cai, Fay, Gal, Hui



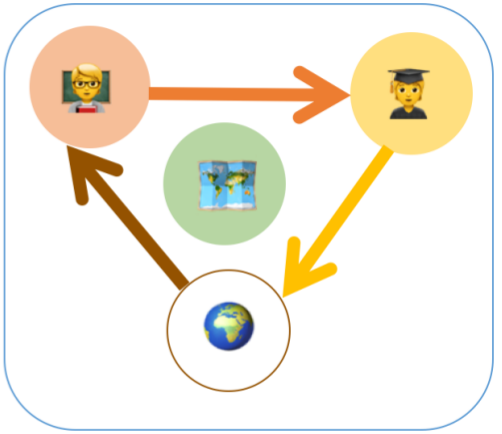
Da (Pre-Reform)



Bo (Pre-Reform)



Eli (Pre-Reform)



Kit (Post-Reform)

Figure 7.5 Models' differences in subject-discipline-education relations

7.2.3 Conclusion of this section

Both cohorts have some heterogeneity against the Lambert model. The pre-Reform cohort is heterogeneous to Lambert's model regarding the subject-discipline-education relations, represented by Bo and Da. The post-Reform cohort differs from Lambert in the student-teacher-subject relations. They tend to view school geography as a medium to transmit instead of a co-constructive element, which Lambert suggested. In summary, Shanghai teachers in both cohorts outline hierarchies in visualising the five elements.

7.3 Reasons Behind the differences between Lambert and Shanghai teachers

This section provides two reasons why teacher diagrams could differ from the Lambert model. The first reason relates to the fact that Lambert's model is theoretical and, therefore, idealised compared with the models that the participant teachers create. The second is that Lambert works in an English context which might not translate unproblematically to the Shanghai context.

7.3.1 Lambert's theoretical model vs Participants' models in practice

This section traces the difference in the diagram makers' intentions and positions. While Lambert's model shows a researcher's vision of teacher choices in curriculum making, teachers draw diagrams to reflect their choices at work. Regarding the diagrams' purposes, teacher participants and Lambert have different beginnings. Lambert creates a model from outside to capture trends and widespread practices in teachers' curriculum making, which necessitates making simplifications and generalisations. The participant teachers, meanwhile, offer a subjective understanding of their own individual practice.

Lambert's model is rooted in research projects, designed as a heuristic framework to encourage teachers to embrace their role as curriculum makers. The teacher element in Lambert's model represents his expectations of what teachers ought to be: balancing the three competing zones of influence (teachers, students, and the subject). According to Lambert et al. (2015), this balancing act takes place in the context of the geography discipline and serves the broader educational aims (also see Figure 7.1). I then extracted the five elements (education, geography discipline, school geography, teachers, and students) from the Lambert model to conduct the empirical study. Participant teachers started to draw diagrams with the five elements by giving me instructions. They were encouraged to reflect on their experiences

to visualise their assumed relationships between/ among the five elements. Simply put, Lambert's model objectifies teachers from a teacher education perspective, but teacher diagrams show teachers' subjectivities in visualising their understandings.

In terms of the role of students in the diagrams, participant teachers' expressions were based on their teaching experiences with students in Shanghai, and possibly what teachers thought as communicable to me and my research audience. The Lambert model describes what Lambert thinks as communicable with teachers as the intentional audience: students have an important co-constructive role in that. "Student experiences" in Lambert's model refers to students in general, hence hypothetical, but "students" in teacher diagrams represent what participants see in their students, hence a particular set of students.

When some teachers' diagrams show they do not view students as being co-constructors in curriculum making, it does not necessarily mean that they do not think students should be co-constructors. It is more of the case that they are thinking of their students in a particular time and space. They are thinking of a particular group of 15-year-olds living in Shanghai, thinking about Gaokao and university, consequently narrowing down their horizons. However, working in a university gives Lambert the luxury of not having to worry about school students' exam outcomes. However, I argue that it is also vital for teachers to develop some personal ideas of education outside of the official discourse, even if they sometimes have to compromise their personal ideas to fit the official discourse. Chapter 8 will discuss how teachers' different ideas of educational purposes influence their agency for curriculum making. The point here is that teacher diagrams show Shanghai teachers are keenly aware of the importance of students' academic performance, while Lambert does not address any assessment.

7.3.2 Lambert's English context vs Shanghai context

Writing in the English context, Lambert is able to draw on a long tradition of geography education in schools and universities; no such tradition exists in Shanghai. The second explanatory factor might be a weaker school geography tradition in China than in England. Geography teachers in England have a long tradition of 'owning' their curriculum content with solid support from the Geographical Association (Goodson, 1981). The Geographical Association (2015) reported a crisis in teacher supply shortage and geography ITE

recruitment difficulties, the GA then provided recommendations for policymakers, ITE providers and the geography subject community. The Geographical Association (2022) also produced a framework for the school geography curriculum to outline the nature of the school subject and its disciplinary foundations. English geography teachers were not as constrained by curriculum standards as Chinese geography teachers, and had support from subject communities such as GA, but they also faced increasing emphasis on accountability (Lambert, 2011; Mitchell, 2017, 2020). However, Shanghai teachers in upper secondary schools work in a different context predominantly driven by high-stakes examination. School geography had been a marginalised humanities subject for long (Chen, 2013) before gaining the recent popularity triggered by the 2014 Gaokao reform.

Although school geography in both England and China is one of the Humanities subjects, undergraduate geography degrees in English universities can be either Bachelor of Science (BSc) or Bachelor of Arts (BA). However, BSc is the only choice in China, resulting in a divergence between school geography and university geography education. In a nutshell, school geography in Shanghai has benefited from the increased prestige in Gaokao and a sudden increase in student numbers. These improvements, however, have occurred rapidly, and so have not been matched by corresponding developments in geography education in Chinese academia.

Highlighting geography's discipline-subject discontinuity in China is vital to understanding school geography's vulnerable role. The Lambert model implies that an individual teacher is agentic enough to collaborate with school geography as a resource (Lambert and Morgan, 2010). However, the participant teachers frequently mention how policy and people 'up there' influence them in teaching geography. The difference is that Lambert assumes school geography and teacher choices as equal interacting zones of influence, but not all Shanghai teachers see themselves and school geography as equal elements in drawing their diagrams.

Summary of this section

This section compares the teacher diagrams and the Lambert model from the perspective of diagram making to the contextual differences (school geography, teachers and students). The ongoing educational system in Shanghai brings temporal and spatial dimensions to understand the idealised Lambert model by further exploring teachers' choice-making process. It becomes evident that there are two types of teacher diagrams; one type shares

more with the Lambert model, and the other type shares less with it. Chapter 8 will take two types of teachers "Lambert-aligned" and "Lambert Divergent" to discuss the role of teacher agency in moving them closer or drifting away from the Lambert model.

To conclude, Lambert suggests a collaborative triadic teacher-student-subject relationship as an ongoing process inside a hierarchical education-discipline-subject system. Meanwhile, Shanghai teachers hold more diverse ways of connecting the five elements in their diagrams, with a hidden focus on the outcome of their students' academic performance.

7.4 Limitations of the Lambert model and teacher diagrams

The first limitation is the absence of teachers' growth in different career phases and work environments. The Lambert model shows a teacher in theory, and teacher diagrams are teachers in practice. However, these snapshots may go through temporal and spatial changes. The current diagram-making process does not demonstrate the dynamic changes. But teachers are not necessarily always upholding the same conceptions. For example, several teachers mentioned that they did not realise they could learn much from students in their initial days, but gradually they appreciated the interactions. Cai also sees himself as a learner in the educational journey, and Gal appreciates the informal chat after class. This change is a growth in their teaching career but is not shown in the diagrams.

The second limitation of these diagrams is omitting other stakeholders or supportive resources for the individual teacher. For example, Lambert's model does not reveal teachers' professional networks. The Lambert model presupposes that an individual teacher knows themselves well, is informed about their choices and can act upon them. Following the elements in the Lambert model, the teacher diagrams also do not address the professional network. However, it is usually not the case for a teacher to work independently. The teacher diagrams here also did not show teachers' networks, but teachers talked about their professional networks in the interview (see more in Section 6.3 p. 131). Mitchell (2020) argued that his 'hyper-socialised' model of curriculum enactment described "the current situations" to compare with the idealised aspirational model of 'curriculum making'. The hyper-socialisation is a feature of late-capitalist times, highlighting accountability and pressure to perform. Surprisingly, accountability and pressure to perform also emerged in this study of Shanghai geography teachers. Chapter 9 will discuss more on it.

The third limitation is that the diagrams are the diagram makers' recreations of what teachers do. The diagrams do not include what happened in the classroom and the teachers' reasoning behind their actions. For example, there might be teachers who are good curriculum makers, but unable to articulate this verbally or summarise their thoughts into a diagram, whereas others might be poor curriculum makers but say that they are confident with curriculum making. In other words, diagrams being presented as a static image have limitations, which can be teased out through more in-depth interviews.

These limitations led me to ask the teacher agency question, which required looking at the embedded social structure. It takes culture and its visible or hidden hierarchy into account. Do they (the policy/ the school/ the professional networks/ the wider society) provide a hospitable or hostile environment cultivating individuals' agency? For this chapter, the point is to suggest a reframing of the Lambert model according to the Chinese system, preparing for an exploration of where teacher agency is in the Chinese system (specifically Shanghai). What choices does the system encourage or discourage teachers from making? How does the feature of professional ranking (hierarchy) influence the ecology of teacher agency?

7.5 Summary and looking forward to teacher agency

Overall, this chapter used the Lambert model as a lens to analyse the teachers' diagrams, identifying aligned patterns and differences. There are several reasons why it is inappropriate to import the Lambert model into Shanghai directly. It is clear from these diagrams that the cultures and structures in China create particular conditions which necessitate a modification of the Lambert model to give a Shanghai model with teachers' perspectives. The next chapter will look at these dimensions of structure and culture to explore how a new model of geography curriculum making in China might be devised.

It is noteworthy that part of the Lambert model's context is that geography teachers in England used to have a tradition of taking ownership over the curriculum. However, this was not the case in the participant teachers' context. The Lambert model assumes agentic teachers, while this study's teachers do not always feel encouraged to be agentic. Moreover, teachers' situations in their practice are more complex than the elements outlined in the

Lambert model. Chapter 8 will refer to changes in their life stages and school contexts to zoom in teachers' life and professional career paths.

A frame suggesting social and political factors are more than contexts would better position teachers' role in curriculum making. Another curriculum making frame (Alvunger *et al.*, 2021) exists to present the diverse flows across different layers of curriculum making (Figure 7.8). Unlike the Lambert model, this wheel shows curriculum making activities at different sites. Teachers interact with school leaders and students in the school-based curriculum making at micro and nano sites, and they also support administrators and brokers at meso and nano sites. Both are legitimate and common curriculum making activities for teachers, which occur in different sites but potentially involve the same people. Some teachers may even get involved in macro curriculum making external to the schools. In brief, this wheel enables teachers to think about their roles across different sites. In fact, some of the participant teachers also describe their different roles beyond teaching school geography. The next chapter will discuss teachers' differing agency for curriculum making.

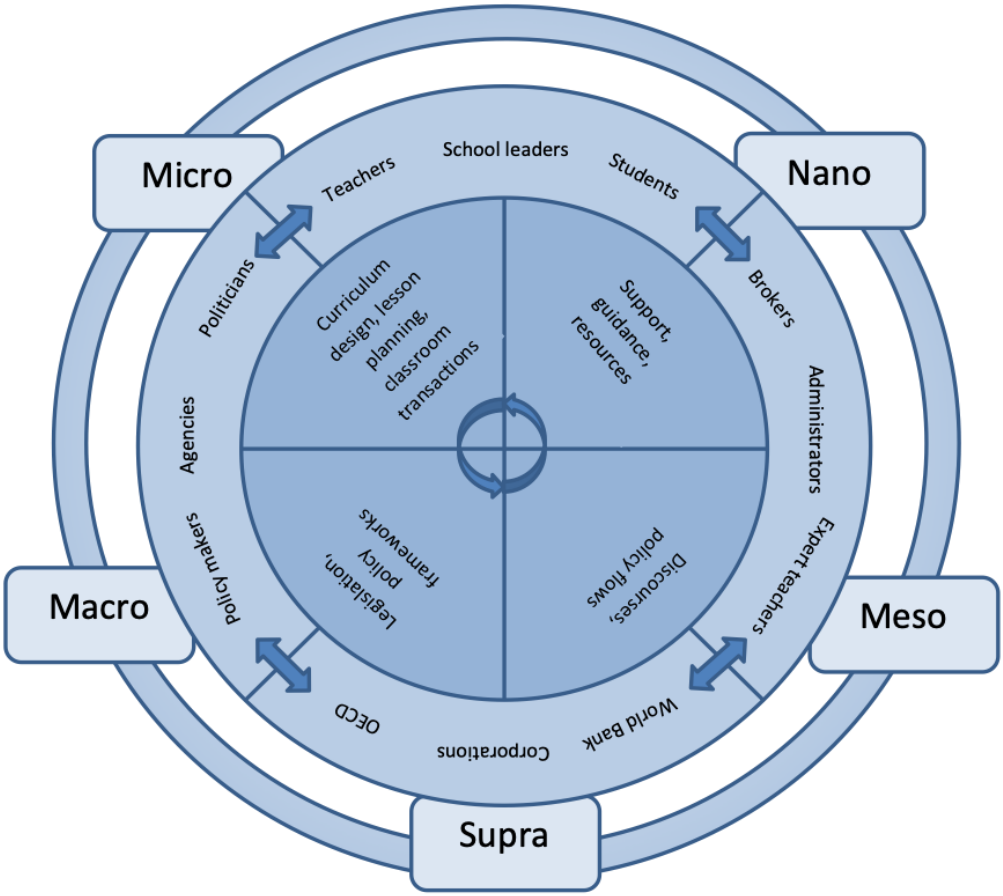


Figure 7.8 Curriculum Making with sites, actors and activities (Alvunger *et al.*, 2021, p. 275) (first appeared as Figure 3.4, p. 74)

As this frame is not designed for geography education or academic subjects, the academic discipline and school subjects are absent. In replacement, the agencies, policymakers and international organisations become the macro and supra sites for the curriculum activities. Arguably, the delivery role is still part of curriculum making, but it is more truncated than active curriculum making, which happens when teachers also actively embrace their curriculum maker role, rather than a transmission role. Even when teachers consider themselves merely as deliverers of examination content, this role is still considered as curriculum making in this frame. It is just the delivery role is more truncated than active curriculum making.

However, my research follows Alvunger *et al.* (2021) which goes under the skin to look at the teachers' personal and professional histories as activities in different sites. Would it be possible to explore their transition from students to teachers, from novice teachers to experienced ones, and from subject specialists to school leaders or administrators? Moreover, as the research is aware of the politicians' influence, how does the policy discourse connect to the power relations at work? How does the language of geography associate with the language of the geography exam paper? The teaching-to-the-test approach does not preclude teachers from being active in curriculum making, although this approach may be associated with restricted forms of curriculum making. The other dimension that needs exploration is the geography teachers' projections. How many of them have the vision of becoming expert teachers? Brokers? School leaders? Or maybe politicians? To what extent are these career futures available for the participant teachers? Chapter 8 uses the teacher agency model to address the above questions posed here.

8 Teacher Agency for Curriculum Making in response to RQ3

This chapter utilises an ecological model of teacher agency (Priestley et al., 2015) to theorise how Shanghai teachers are able to achieve agency for curriculum making. As explained previously in Chapter 4, this model comprises three temporal dimensions of agency from Emirbayer and Mische (1998). Hence, I apply the internal structures of the dimensions (Emirbayer and Mische, 1998) in order to add more nuanced layers to the analysis (Figure 8.1). The first section addresses the iterational dimension to investigate teachers' past personal and professional experiences, which influence their agency for curriculum making. The second section unpicks the projective dimension to analyse why some teachers can imagine alternative possibilities for their practice, while others find this more challenging. The third section focuses on the practical-evaluative dimension, which explains how context shapes teachers' possibilities for actions – both practical (what is possible) and evaluative (what is judged to be possible). By doing so, the chapter enables the reader to see Gaokao as a major part of the ecology for Shanghai teachers. It has formed the person iterationally, informs their future projections, and is also a part of their work culture. Based on recognising that Gaokao permeates the three temporal dimensions, the chapter ends by reflecting on the ecological teacher agency model with internal structures, answering RQ3: *In what ways does Shanghai geography teachers' agency influence their curriculum making?*

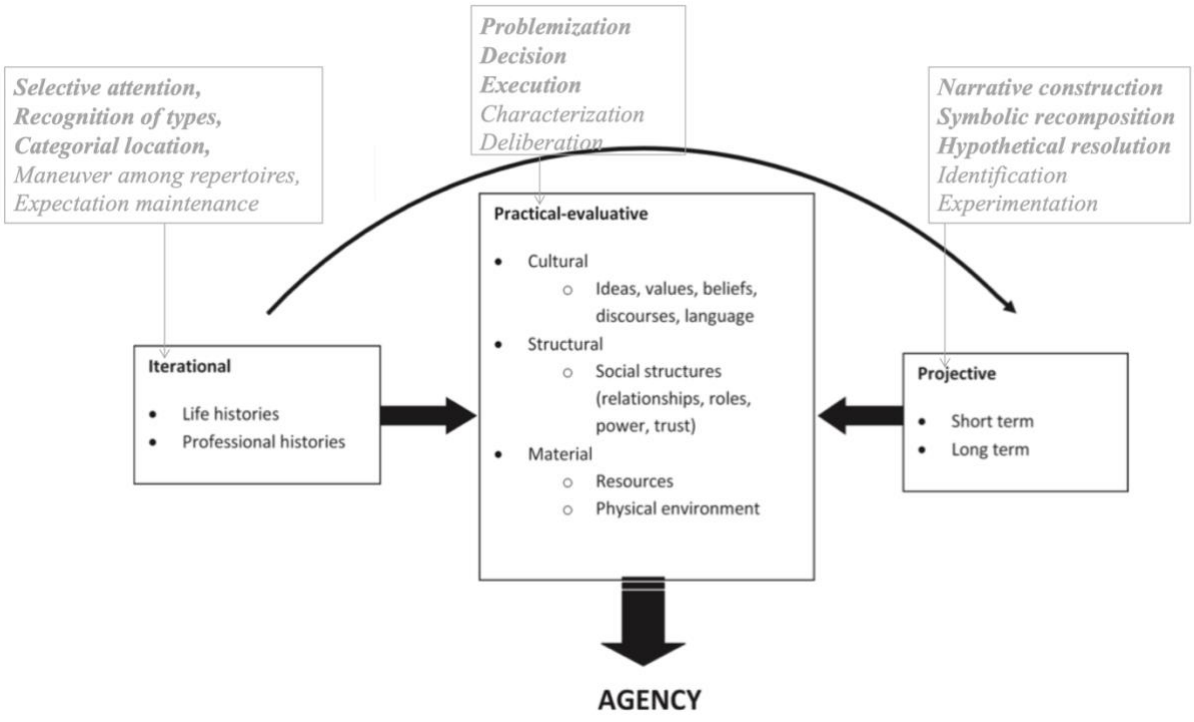


Figure 8.1 An ecological teacher agency model (Priestley et al., 2015, p. 30) with internal structures (in grey)

Following the previous chapter's findings on "Lambert-aligned" and "Lambert Divergent" teachers, I present them in Figure 8.2 with their cohort. The curriculum making diagrams from the pre-Reform "Lambert-aligned" teachers (Cai, Bo and Alex) aligned more closely to the Lambert model than diagrams from the post-Reform "Lambert aligned" teachers (Fay and Gal). The post-Reform "Lambert Divergent" teachers (Hui and Kit) draw curriculum making diagrams more different to the Lambert model than the pre-Reform "Lambert Divergent" teachers (Da and Eli). In both cohorts, teachers who studied undergraduate ITE had a more substantial alignment with the Lambert model than teachers who did not study ITE during their undergraduate degrees; furthermore, teachers who intentionally extended their professional networks have more substantial alignment with the Lambert model than others who oriented their work centring teaching to the test.

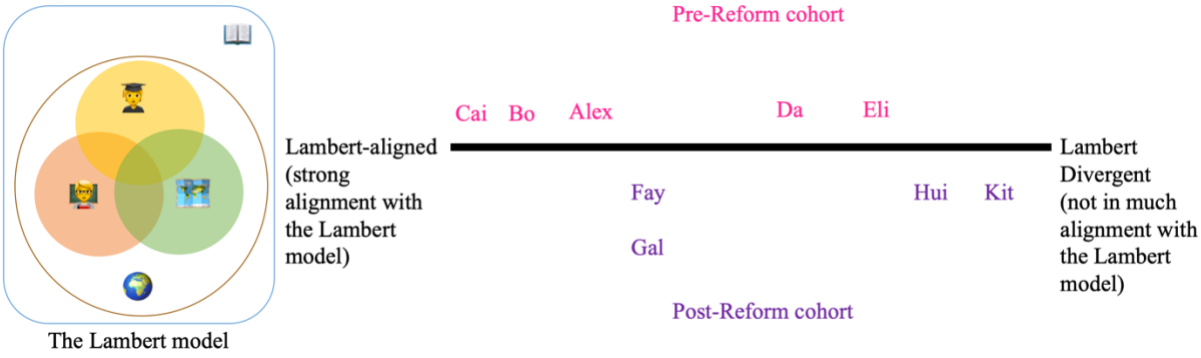


Figure 8.2 "Lambert-aligned" and "Lambert divergent" teachers

The chapter focuses on investigating the role of teacher agency for curriculum making. Hence it is vital to define what is teachers' operationalisation of curriculum making. In the Lambert model, curriculum making is seen as teachers accommodating their choices with students experiences and school geography in the context of geography discipline and broader educational aims. My previous analysis has put together the five key factors' interplay as curriculum making: teacher (themselves), students, school geography, geography discipline and educational aims. My study features teachers as actors in the five factors, hence this chapter goes through the three dimensions of teacher agency to trace emerging patterns in nine case teachers' operationalisation of curriculum making.

8.1 Iteration: life histories and professional histories

This section aims to explain the link between teacher agency for curriculum making and teachers' experiences in the past. Figure 8.1 provides a way to investigate this link by examining participant teachers' general life histories and specific professional histories. The former refers more to personal experiences, including schooling; the latter means teacher education and the experience of being a teacher before participating in this study. Priestley *et al.* (2015) theorise teacher agency by applying the Emirbayer and Mische (1998) chordal triad of agency, suggesting:

> *The iterational dimension of teacher agency* is formed through teachers' life and professional histories and comprises their professional and personal knowledge and skills, their attitudes, values and beliefs. While the iterational is often concerned with habit (and expectation maintenance), it is also characterized by individuals' ability to choose and manoeuvre between repertoires. This professional habitus is important in framing how teachers might actively respond to dilemmas, problems and opportunities in their work and is an important factor in shaping their practices in response to centrally mandated curriculum reform. (p. 130)

Although the framing is related to the Scottish 'Curriculum for Excellence', my data of Shanghai teachers suggest two key variables that facilitate or obstruct teachers in becoming agentic curriculum makers. In this section, I apply the framing above and the internal chordal structure of iteration (Emirbayer and Mische, 1998) to understand:

- Epistemic flexibility of schooling experiences
- Teachers' stated purposes for teaching geography

8.1.1 Life histories: Epistemic flexibility of schooling experiences

I argue that a teacher's epistemic flexibility of schooling experiences contributes to teacher agency for curriculum making. What I term epistemic flexibility is the ability of teachers to understand how rules of verification differ between different fields of knowledge production. Teachers who have achieved more epistemic flexibility are able to appreciate how geography differs from other subjects and disciplines at an epistemic level, whereas less epistemically flexible teachers cling to a narrow positivism/ realism which privileges knowledge production in the physical sciences. This factor is evident for the pre-Reform cohort but not the post-Reform cohort. Excerpts regarding pre-Reform teachers' views on how their school

education has influenced their teaching will help explain why teachers' epistemic flexibility is a shaper of agency for curriculum making.

When the participants were students in upper secondary schools, they had to choose to study either sciences or humanities for the Gaokao. Geography was one of the humanities subjects. Chapter 6 showed that four of five pre-Reform participants studied sciences for their Gaokao: Bo and Cai were agentic in curriculum making practices, while Da and Eli were more exam-oriented in their practices. Chapter 7 then showed that the former's curriculum making diagrams turned out to be "Lambert-aligned", but the latter two teachers' diagrams were "Lambert Divergent". Their limited achievement of agency may be related to their still clinging to 'scientific thinking' in teaching geography, evidenced by the quotes below:

> *I used to study physics, I feel that, in fact, I do not have a good method to learn geography. Why? Because I did not study geography (at school). I used to study sciences. Basically, when I learn something, I will sort out bullet points and find patterns or rules. […] Geography needs you to read intensively about case studies, which will support your understanding of it. However, when I started to learn geography (at university), I just grasped some keywords. I think this is thinking, how the subject's thinking influences you. You learned in this way in your secondary school. Then you keep learning in this way, which will be influential afterwards. [Da]*

> *In fact, geography can also be called 'Mystic Learning'. Because it is not like mathematics, physics or chemistry, where you can go from A to B, then to C, then to D. Because I used to be a science student, although I have taught geography, it is still difficult for me to change my way of thinking. Geography does not have a rigorous way to deduce. It does use language to deduce, but this is just self-explanatory. Is that really the case? It is very difficult to tell. [Eli]*

Both quotes suggest that "Lambert Divergent" teachers were socialised epistemically at a very early age (secondary school). More importantly, they keep this way of thinking and think this is not something they can change, or they want to change. They did not let a positivistic view of sciences go even after studying geography teacher education and teaching geography. Eli was scathing about geography, suggesting that they do not seem to achieve an epistemic flexibility to make them change their mind. Holding on to 'scientific thinking'

echoes research that suggests teachers' learning experiences at school are crucial in forming teachers' beliefs (Pajares, 1992) and practices (Nishino, 2012). The internal structure of iteration (Emirbayer and Mische, 1998) explains their attachment to scientific thinking in three ways: "*selective attention, recognition of types* and *categorical location"* (p. 979).

First, both quotes reflect *selective attention,* meaning the social actor focuses on "only a small area of reality" (Emirbayer and Mische, 1998, p. 979). "Lambert Divergent" teachers do not let their positivistic view of sciences go even after receiving geography degrees and teaching school geography. A person who holds a positivistic view about sciences can still be alert to the fact that other disciplines have different (but equally valid) rules of verification. However, these two teachers are selectively privileging positivistic sciences over other rules. Even when they are known as geography teachers, the pre-Reform "Lambert Divergent" teachers still recognise themselves as science students. When they studied geography at universities, the discipline of geography was in the category of sciences. However, school geography in China is seen as one of the humanities subjects. As a result, their directed attention limits their achievement of agency for geography curriculum making as they only recognise the scientific features of geography.

This is where the *recognition of types* appears. According to Emirbayer and Mische (1998), social actors identify typical patterns of their past experiences and simplify them into models. Even when the new emergent situations do not match their simplifications, the actors assimilate new experiences into the old so that they can keep "a sense of continuity and order within temporally evolving experiences" (Emirbayer and Mische, 1998, p. 980). This is evident when Da expressed that they studied geography in the same way they studied physics. It is also obvious when Eli critiqued school geography's rigour for using a different deduction to sciences. From an epistemic perspective, Eli equating 'rigorous' to 'deduction' shows a narrow positivistic view of what it means 'to know', which obstructs their achievement of agency in understanding that geography could operate with different kinds of truth claims.

Thirdly, Eli's critique also suggests *categorical location*. It requires social actors to locate what fits their past experiences "correctly" (Emirbayer and Mische, 1998, p. 980) in order to "work along established lines" (ibid, p.980). Eli established a worldview while learning sciences at school and stuck to this line as their way of thinking. When Eli excluded

geography from sciences, they failed to recognise that geography could operate with different kinds of truth claims. Their lack of recognition of geography represents a lack of epistemic flexibility, which hindered Eli's achievement of agency for geography curriculum making. Similarly, Da also categorises themselves as a science student and never change this, despite ending up teaching a subject with which they do not relate strongly.

Examples of achieving epistemic flexibility

Teachers' past experience of learning sciences at school does not necessarily hinder their agency in curriculum making, at least not for "Lambert-aligned" teachers in this study. It was actually Bo's study of physics which made them realise that they enjoyed facilitating learning and led to their developing an interest in education.

> *When I first entered upper secondary school, I did not understand physics, but suddenly I found my way. […] I quite liked sharing what I learned and ways of learning with others. I said that I wanted to do a major in education (at university) […] What made me become a teacher? Perhaps my physics study in upper secondary school also planted a seed in my heart. […] I remember a classmate who sometimes asked me questions. Then, every time I explained it to them, they would say: 'Ah, you explain it so clearly every time.' [Bo]*

A further transformative experience with geography also helped Bo confirm their strength at facilitating learning. It happened during their part-time job as a supply teacher:

> *What is particularly impressive is, once I finished a class, it should have been my first class, a girl came up to me and said: 'Teacher, this is the first time I have understood a geography lesson!' But why could I help her understand? Because I was also a geography idiot, perhaps the student and I were at the same starting point, so I would think of a way to teach (geographic concepts) as clearly as possible from scratch. I think teachers assume students understand many geographical concepts, but the issue is that these concepts may be students' blind spots. For example, São Paulo is a distribution centre for coffee. Students are asked to explain why. Some students could not give a good answer, nor could I, as the difficulty is not knowing the meaning of a distribution centre. How can one explain the reasons clearly without knowing what it means? I later reflected on this. I make sure I first understand the meaning of the term and then communicate with students in this way. [Bo]*

Bo's selection and interpretation of these two incidents can be seen as evidence of Bo noticing and creating critical incidents (Tripp, 1993). Bo's interpretation made the compliments they had received from their classmate and student significant in justifying their later choice of a teaching career. The positive feedback made Bo notice their strength at articulating things to facilitate learning. The girl's feedback also made Bo feel good about making knowledge more accessible to students who did not understand another geography teachers' teaching. Bo's analysis makes this incident a turning point, after which they had the confidence to start a teaching career with the intention of making geography understandable to all students. In other words, receiving compliments feeds Bo's motivation to teach. These formative experiences were reflected in Bo's teaching practices as they spent time accommodating the needs of students. In Bo's case, ~~that~~ there was a clear line between their past experiences and the agency they had as a curriculum-maker.

Bo's agency for geography curriculum making also echoes the internal structure of iteration (Emirbayer and Mische, 1998). First, Bo's choice of the two incidents also shows how *selective attention* has influenced Bo. Their common theme is that Bo notices and confirms their strength in helping students understand the subject when other teachers cannot get it across. The positive interactions between Bo and others also give them a sense of directed *selective attention*. In contrast with the "Lambert Divergent" teachers, Bo selectively recalls their school education more to the learning process and the importance of a clear explanation of the subject content.

Secondly, Bo connects the new compliment to their previous school experience, indicating *recognition of types*. This is a process of "typification" (Emirbayer and Mische, 1998, p. 979) when actors recognise the similarity between an emerging experience and a past experience. Bo connected the compliment they received from a student as a teacher with an earlier compliment they had received from a fellow student in secondary school. In this case, the later incident reawakened Bo's memory from their own student days that their struggles with school physics had been a strength in teaching others. Bo attributed what makes them empathic to students' situation to "*I was also a geography idiot*". Bo turned their personal histories in not being quick and switched-on in learning geography into a strength that they can understand why some students are struggling. In short, Bo also considered the empathy comes from them being in that situation. Bo figured out they can reorient their agency. They could facilitate classmates' physics learning. Bo's emphasis was not that they used to learn

physics well, but that they were good at facilitating learning. The student's compliment enhanced Bo's confidence in their skill in facilitating learning. Bo became aware of their potential to make the curriculum approachable for every student, including those seen as 'geography idiots'. Bo assimilated two experiences and recognised their strength in explaining what they learned to others clearly. Bo feels validated when someone understands the subject through their facilitation, rather than clinging to a particular subject.

Thirdly, in terms of *categorical location*, the critical message Bo took away from learning sciences at school was that they could do well at facilitating others' learning. Bo categorised this as their skill and located further incidents of facilitating students' geographical learning into this skill. However, what Da and Eli took from learning sciences at school was to categorise themselves as science students and accept 'scientific thinking' as part of their knowledge. When Da and Eli found geography did not fit within their knowledge, they could not locate geography with their established lines. Overall, the internal structure of the iterational dimension empowers Bo to be more agentic in facilitating learning, encouraging Bo's passion for geography curriculum making.

Unlike the "Lambert Divergent" teachers (Da and Eli), the other two pre-Reform "Lambert-aligned" teachers (Bo and Cai) who studied sciences at school have developed more sophisticated epistemologies. They no longer see the scientific method as the only route to truth, but now also appreciate the value of a geographical way of understanding the world:

> *I didn't used to be a fan of geography, but I really felt lucky after becoming a geography teacher. People in this subject, in general, have great love (for nature and humanity). Every day, they (geographers) see mountains, rivers and the universe, so I feel lucky. When I watch some documentaries and films, if I find some geographical perspectives, I would also share them with students. [Bo]*

> *Geography is the only school subject which integrates humanities and sciences, and it has a distinctive conception of a holistic view. Therefore, I think what it brings to students should be very enlightening. [Cai]*

In the quotes above, we can identify what Emirbayer and Mische (1998) call "*categorical location"* and "*maneuver among repertoires" (p.980)*. Both have adapted from science students to geography teachers who accept "socially recognised categories of identity and

value" (Emirbayer and Mische, 1998, p. 980), locating themselves in the category of geography teachers and exercising effort to disseminate geography. The manoeuvrability[26] appears in Bo "finding some geographical perspectives", showing "a process of selection from practical repertoires of habitual activity" (Emirbayer and Mische, 1998, p. 980). Here, the iterational dimension meets the other temporal dimension: practical-evaluative, will be discussed Section 8.3. In this section, what matters is that Bo's expression of an intention to select "geographical perspectives" contributing to their agency for curriculum making.
The quotes also show that both "Lambert-aligned" teachers have thought over the meaning of geography education, such as "great love" and "a holistic view". That is, they have moved on from a simplistic and naïve epistemology focusing only on positivism[27]. Potentially, they can look at different ways of making the curriculum as they are able to draw upon more sets of experiences to make a geography curriculum than those who hold on to one kind of truth claim. The pre-Reform "Lambert-aligned" teachers are more epistemically flexible than the "Lambert Divergent" teachers in acknowledging that geography can hold a different kind of truth claim than positivism. In other words, teachers who are able to envisage different alternatives seem to be more agentic than those who cling to a narrow positivistic view of science. The richness of teachers' professional experiences here has implications for teacher development, which I will further discuss in Chapter 10.

8.1.2 Life and professional histories: Teachers' stated purposes for teaching geography

The epistemic flexibility noted above only applies to the pre-Reform cohort. In the post-Reform cohort, the "Lambert Divergent" teachers with school science backgrounds (Hui and Kit) recognise that Geography is a combination of humanities and sciences. However, as shown in Chapter 6, they did not study initial teacher education and were not passionate about curriculum making. The possible determinant factor in the post-Reform cohort is that they only have the experience of teaching geography as a popular Gaokao subject.

> *I do not think there were any big issues in the past. […] For Gaokao, (I was) given enough class hours, which is time to do exercises. I also gave a few students individual tutorials. No big issues. Following the 2021 Gaokao reform, I would like to*

[26] As the cited paper by Emirbayer and Mische (1998) is written in American English, but this thesis mainly writes in British English. American English only applies for the quote, not in my writing.
[27] Positivism is not inherently naïve or simplistic, but their (in this study, pre-reform teachers who studied sciences at schools) understanding of positivism seems to be so. It is important to make a distinction that this sentence does not suggest that positivism is naïve or simplistic and has nothing to offer as an ontology.

know the requirements of the exam. We do not know what types of questions are in the exam paper. (There is) no exam syllabus. […] I have the textbooks but do not know how deep I shall teach and what will be tested. (I am) in need of a direction. [Hui]

As a geography teacher, to be honest, as long as you sort out the books and basic knowledge points, go through the first year, and improve in the second year, your teaching is basically a habit. […] For everyday classes, I completely follow the textbooks because these are the content to be tested. In fact, the class hours are just enough for you to finish teaching the textbooks. [Kit]

Both extracts illustrate that the post-Reform "Lambert Divergent" teachers narrowed down the curriculum and taught to the test. "*Selective attention*" (Emirbayer and Mische, 1998, p. 979) helps explain their exam-orientation but not enough. It is helpful because teachers' focus on the test was a habit they picked up in teaching geography as a popular Gaokao subject. They took their habitual practice for granted. It is not enough because they do not need to direct attention to Gaokao because they entered teaching when the spotlight was already on it.

The way Hui describes her expected support also indicates the two secondary iterational tones in relation to the future and the present. *Expectation maintenance* happens when the social actors use the schematization they have formed in predicting the future, so that these expectations give them "stability and continuity" (Emirbayer and Mische, 1998, p. 981) to act with a sense that they can do this again and think others will act in predictable ways too. Hui wants an "exam syllabus" so that she can plan to teach like she used to, suggesting a potential for repeating her past experiences in the future. Hui's quote also indicates her lack of *maneuvre among repertoires*. Manoeuvrability requires one to select from "practical repertoires of habitual activity" (Emirbayer and Mische, 1998, p. 980). However, Hui only experienced teaching geography when the Gaokao performativity pressure drove it. Chapter 6 already showed that Hui did not study school geography for her Gaokao, never studied ITE, and never worked as a part-time geography teacher before this teaching position. It was challenging to manoeuvre when she only knew one repertoire. The exam-oriented teaching and the performativity pressure not only limited their understanding of teaching geography but also reduced the likelihood of their potential to achieve agency for curriculum making.

In a nutshell, what prevents the post-Reform "Lambert Divergent" teachers from achieving agency for curriculum making is that they started to teach geography in a high stakes performative system driven by accountability. However, the other two post-Reform "Lambert-aligned" teachers (Fay and Gal) also worked under the pressure of teaching-to-the-test but did not just see school geography as a test subject to pass. Superficially, the explanation might be found in that Fay and Gal experienced geography Gaokao and studied ITE in their undergraduate degrees, but their interviews suggest a more nuanced understanding of teachers' personality differences. It still could be argued that their access to undergraduate ITE has opened up the way they teach geography and see their role in it. The point to make here is to see teachers as people, not just accumulations of their education.

In Chapter 6, we read that Gal was always sure to pursue her career in teaching geography, and Fay made up her mind after trying internships in other fields. Both teachers understand that their teaching means more than preparing students for the exam. Fay feels "a guilty conscience" when students ask questions beyond her expertise. Fay also talked about her interest in using information technology to teach geography:

> *When I had my maternity leave at home, I signed up for Massive Open Online Courses (MOOC) to learn the application of information technology in geography education. I also listened to lectures about the application of artificial intelligence in education. It is not just for geography education. Because I find myself quite interested in this. But I am still in a position of listening to courses. I need to learn to apply (them in my classes). [Fay]*

Gal recalled the professional discussions she had with her mentor (who later left the school):

> *An obvious advantage of a young group was that we were very passionate. At that time, we always had informal discussions. If my mentor had time, they would come and observe my lessons. Then they would share a lot of lesson planning ideas with me. They took me along the way and built a solid academic environment. [Gal]*

The Emirbayer and Mische (1998) term "*maneuver among repertoires*" (p.980) provides insights into the two "Lambert-aligned" teachers' quotes. As for Gal, although her mentor is no longer at her school, revisiting their time together shows that her past has a role to play in shaping her current habitual activity in professional discussions, such as her active participation in this study and inter-school lesson observations. Fay brings temporal

dimensions together by recalling her previous experiences during maternity leave and relating them to her current status of learning as well as future directions of applying what she has learned. This means she not only selects her attention but also manages to select "from practical repertoires of habitual activities" (ibid, p.980). In addition, "*expectation maintenance*" (ibid, p.980) appears when Fay predicts her future moves will continue her attention on information technology. It means the social actors' schematisation gives them "stability and continuity to action" (p.981). In this case, is Fay's potential to go further with her interest in combining information technology with her geography classes.

Overall, these four post-Reform teachers present two different types of teaching, which led to their contrasting attitudes to curriculum making. The "Lambert Divergent" teachers are less critical and more compliant than the "Lambert-aligned" teachers. The former felt overwhelmed by the accountability pressure and saw no alternative besides teaching to the test, which obstructed their agency in curriculum making. The second kind of post-Reform teachers have their agency in curriculum making due to their own interest or immersed in a good culture of professional discussions. For the "Lambert-aligned" teachers, their horizons are not limited by the Gaokao reform.

8.1.3 Cross-cohort summary

The preceding analysis raised two iterational themes that emerged from the data: (1) epistemic flexibility of schooling experiences and (2) teachers' stated purposes for teaching geography. Although these themes are both more or less connected to Gaokao, the nuances that arise from the data clearly convey that individual teachers are able to interpret and act differently to deal with their past experiences. Teachers' interpretations and responses contribute to their achievement of agency for curriculum making in the iterational dimension.

The data suggest that sometimes it is not school education itself but participants' epistemic flexibility which influences their agency in curriculum making. This applies to teachers with school science backgrounds in the pre-Reform cohort. This factor does not apply in the post-Reform cohort because Gaokao reform seems to overwrite teachers' reflections on teaching-to-the-test (see Hui and Kit). This is partially why post-Reform teachers with school science backgrounds are "Lambert-aligned" and not active in curriculum making. However, it also could be related to their lack of teacher preparation. They both sat the teacher qualification

exam (NTCE) without initial teacher education. The other two post-Reform teachers are "Lambert Divergent". They studied teacher education during their undergraduate degrees and saw their role in teaching geography as more than preparing students for the examination. In addition, what may prevent teachers from being driven by students' academic performance could be their personal interest and professional vibe. If the departmental assimilation overrides individual agency, the suffocating vibe could hinder a teacher from achieving agency for curriculum making. Conversely, collegiality could encourage one's achievement of agency for curriculum making.

Overall, to facilitate geography teachers to achieve agency for curriculum making, this section concludes that what they need is a better understanding of disciplinary epistemologies – they can achieve the epistemic flexibility once they have this understanding. Any policy to increase the performative accountability system should be considered carefully. Initial teacher education, especially at the undergraduate level, lays a good foundation for teachers to become more self-driven in developing their agency for curriculum making.

8.2 Projectivity: teachers' future aspirations

This section outlines the link between teachers' future projections and their agency for curriculum making. Priestley *et al.* (2015) theorise the projective dimension of teacher agency through the applications of Emirbayer and Mische's (1998) chordal triad of agency:

> *The projective dimension of teacher agency* concerns teachers' ability to visualize alternative futures in their practice. Agency is always motivated, and the range of responses (and the degree to which teachers are able to achieve agency) is at least in part dependent on their ability to develop aspirations around their professional working. Such aspirations can be short-, medium- or long-term and can be expansive or limited in scope. The extent to which teachers can frame aspirations – and imagine alternative futures – will again affect the nature of their responses to curriculum reform policy. (pp.130-131)

The theorisation led me to interview participant teachers about their short-term and long-term aspirations. The data also suggests a connection between teachers' abilities to visualise alternative futures and their achievement of agency for curriculum making. The first part focuses on teachers' short-term projections in response to the changes from September 2021.

The second part discusses long-term career visions in terms of five-year or ten-years plans. The last part summarises teachers' future aspirations and discusses the model.

8.2.1 Short-term: responses to the 2021 changes

Participant teachers frequently mention two changes in Shanghai upper secondary schools starting from September 2021. They are important as teachers' responses to these changes show how their agency influences their curriculum making practices. One is the first use of new geography textbooks. The Shanghai Municipal Education Commission (SMEC) organised a team of geography educators and geography teachers to compile textbooks based on the National Geography Curriculum Standards (MoE, 2017). All Shanghai schools started to use the new textbooks from September 2021. For most[28] geography teachers in Shanghai, it was their first time to teach with the new textbook. The other is that SMEC moved geography Gaokao back to Year 12 like all other subjects (see Chapter 2 Section 2.4). This change removed the strategic advantage that schools and pupils could gain by taking their geography in Year 11 and banking the result.

In the second interview, the post-Reform "Lambert Divergent" teachers were concerned about the number of entries for geography Gaokao. Their worry was that most students would no longer prioritise geography as their optional Gaokao subjects. Thus, geography teachers would not have many students to teach, which means a potential fall in their wages. Kit visualised an alternative future through "changing a job" because she would not able to "survive" with a salary cut, Hui wanted to open a school-based optional course for students to choose in the next academic term:

> *Because now I teach fewer classes than before, I want to open an optional course. It is mainly about Chinese Vernacular Dwellings, because the current textbook has reduced this topic, it gives me an opportunity to expand it. I am also interested in this topic. My plan is to open this course next term, so I hope I can prepare for this course in this term. […] I have thought about it before but not well-thought-out, so no implementation yet. I only have an outline. I have not decided on activities for each class. […] I was interested in this kind of architecture since I was young. […] Very*

[28] Before all Shanghai schools used the new textbooks from September 2021, the textbook writers had chosen a few schools in Shanghai to experiment with the new textbooks as pilot schools. Hence, a few Shanghai schools and teachers already used the new textbook in their teaching before September 2021.

few class hours lead to very low salary[29]*. These are practical issues. (I need to) live and raise up my child.*

Begin with Hui and Kit both anticipate a fall in salary as a consequence of the Gaokao reverting to its formal model, but they respond differently. The fall pushes Kit to consider leaving the teaching profession but accelerates Hui to be more creative in curriculum making. The internal structure of projectivity identified by Emirbayer and Mische (1998) helps to unpack why they proposed different future plans. First, Hui connected her childhood interest and the current textbook to 'make' a potential course, which is "a retrospective-prospective process of *identification*" (ibid, 988). *Anticipatory identification* means that past experiences play an essential role in mapping out future trajectories. Hui's projective actions is based on her existing interest and previous knowledge about Chinese Vernacular Dwellings. Second, the way Hui describes and justifies her proposal is also evidence of "*narrative construction"* (ibid, p.989), which social actors tie their *identifications* to future possibilities in relation to "causal and temporal sequences" (ibid, p.989). It appears when Hui relates class hours to her salary which is used to support her family and when Hui sees the reduction of the content in the textbook as her opportunity to expand the topic in her optional course. Thirdly, Kit's proposal to change a job and Hui opening a course both reflect "*hypothetical resolution"* (ibid, p.990), which is a response to "the moral, practical and emotional concerns arising from lived conflicts" (ibid, p.990). Both career projects address their desire for money due to their concerns about a possible salary cut. However, Hui also presents her desire to express herself creatively through creating a course based on her interests rather than textbooks. Both teachers have achieved agency; Hui's agency achievement is more oriented towards curriculum making, which is what this study looks at, while Kit's agency seems to take her onward to a different vocation, which is not the focus of this study.

However, fewer students and salary cuts do not bother the post-Reform "Lambert-aligned" teachers as much. They both actively pursued a vocation for teaching. As for the future, they would both like to improve their skills in teaching. Fay's primary concern is about "making mistakes about the content to teach" and she proposed two solutions:

[29] The monthly salaries of teachers working at state-owned secondary schools in Shanghai has three main parts: basic wage, classes they took (teaching more classes means having more income; except those who have managerial roles or class tutor roles, in principle, each teacher needs to have 6 classes per week at least), administrative work (including class tutor role, or working at school's other administrative section). However, the way each participant teacher talks about their salaries is not the same.

> *First, prepare the lesson carefully, then this is less likely to happen. The other way is to build up my stock of knowledge. I can read more about geography. If I improve my professional knowledge, when students ask some questions, I can solve them. [Fay]*

As for Gal, she finds it difficult to teach the new textbook as some new content has not been tested in the exam paper yet. She has no idea about how deep she should go. But she has done a few things to deal with her concern. Here is an extract from her reflective diary:

> *This situation will exist for a while, so I need to find solutions. For examples, in teaching the Evolutionary Process of the Earth, I tried the following aspects: First, refer to lesson plans based on other versions of textbooks; second, listen to other schools' showcase lessons; third, consult experts for guidance. [Gal]*

The quotes from post-Reform "Lambert strong" teachers indicate the existence of "*hypothetical resolution*" (Emirbayer and Mische, 1998, p. 988) and "*experimental enactment"*(ibid, p.990) as primary tones of projectivity. The former means social actors propose resolutions that can respond to possible scenarios. Both teachers expressed concern and proposed possible solutions in future scenarios they envisaged. The latter sits between imagination (the future) and action (the present), where social actors may test hypothetical resolutions. Hui's diary suggested that she already put her proposed solution into practice.

The quotes from the post-Reform cohort show two noticeable trends. "Lambert-aligned" teachers focus on the change of the textbook. They are teachers who had undergone ITE, proposed that they would like to actively knit their previous actions into their future aspirations. They focused on what they could do to become more skilful in teaching geography with the new textbook. However, teachers without ITE experiences, which I termed as "Lambert Divergent" teachers, started to feel uncertain about their futures, emphasised the Gaokao policy change in their responses. One possible explanation is that ITE has given teachers a deeper understanding of what teaching is and so "Lambert-aligned" teachers have more resources to draw on comparing to "Lambert Divergent" teachers without ITE backgrounds. Another possible explanation is related to the reasons for them to step into teaching. "Lambert-aligned" teachers focused more on their sense of achievement through teaching instead of payment because they entered teaching as they were passionate about teaching. "Lambert Divergent" teacher entered the vocation by considering employability, attending more to Gaokao policies than "Lambert-aligned" teachers. The distinctive divide

between “Lambert-aligned” and “Lambert Divergent” teachers in the post-Reform cohort represent their different ability to envisage alternative futures.

8.2.2 Long term: Career visions

The previous section showed a distinction within the post-Reform cohort. This section starts by analysing pre-Reform teachers’ visions regarding their agency for curriculum making, then returns to the post-Reform cohort, and ends with a cross-cohort summary.

Similar to the post-Reform teachers, pre-Reform “Lambert-aligned” teachers who studied undergraduate ITE also exhibit more agency for curriculum making than “Lambert Divergent” teachers. The difference is that pre-Reform “Lambert-aligned” teachers are more explicit about expressing their career aspirations than post-Reform “Lambert-aligned” teachers. Alex and Cai both have ambitious plans. Alex would like to write more professional publications and Cai has a clear thread of navigating among different sectors in the schooling system.

During her participation, Alex was pregnant with her second child. Her school did not arrange any classes for her, but let her lead two school projects on developing school-based geography courses and innovative ways to teach with the new geography textbooks. Alex plans to have “a few paper publications and showcase lessons on new textbooks and new teaching methods” in five years, and hope that she can make her writings into “a monograph” within a decade. Alex also planned to explore the field of “children’s geographies”. This research interest emerged from her observation of her daughter playing with a globe. According to Alex, this is “natural because geography is a science about human exploration of the world”. However, Alex found the existing children’s books on geography in China are “mainly statement of knowledge”. She would like to explore ways to make them “more interactive”, such as embedding hands-on activities. She plans to develop a geography book for children in five years’ time and aims to develop a series of books in a decade, which integrates her “hobby, life, work and degrees (in geography)”.

The internal structure of projectivity (Emirbayer and Mische, 1998) is visible in Alex’s case from three aspects. First, *anticipatory identification* (ibid, p.989) is visible when Alex analysed an incident of her daughter and pointed out the lack of interactive design in the book

market, then expressed her ambition to develop children's books in the future. This process draws the past to the future, and shows the role of "memory in mapping of future trajectories of action" (p.989). Second, the way Alex constructs her future plans based on her current work and previous observations brings her narratives "coherent causal and temporal sequences" (p.989), which is a sign of *narrative construction*. Thirdly, Alex taking the initiative to create geography books for children is a response to the book market as a "*hypothetical resolution*" (p.990) to address her concern over "lived conflicts" (p.990). In short, Alex's career projects go beyond classroom teaching considering her desire to explore possibilities of making geography more engaging for children. This is vital to show that Alex is not only agentic for geography curriculum making as a teacher, but also active in her personal life with an intention to make geography more interactive for children.

Cai plans to get more involved in two professional communities: an Examination Proposition Centre and a Geography Master Teacher Hub (GMTH). According to Cai, the Centre not only proposes exam items, but also "designs students' exercises related to the new textbook", which he wants to get more involved in. Cai also plans to be a formal GMTH member:

> *I predict that in half a year, around February or March, the Geography Teacher Master Hub will open up new positions. I want to get in and stay for three years. It will be every Wednesday to study in the Hub. I can go through it, basically I will get what I want, showcase lessons and publications… after ten years, I want to replace [A master teacher in the Examination Proposition Centre]. [Cai]*

Cai's career plan is clearly considered and also shows an intimate awareness of the structures of education hierarchy, and he has an idea about how to navigate the system. It is important to notice that Cai feels at home in this hierarchy and has certain amount of privilege in the world which he is familiar with. The ambitious case of Cai (a male teacher) contrasts with the previous examples of post-Reform cohort teachers and Alex, who are all female teachers. They rarely mentioned about playing a professional game.

However, teachers passionate in curriculum making do not always have clear career plans. In section 8.1.1, we met Bo whose attitudes to teaching and teaching geography had been changed through interactions with classmates and pupils. A strong sense of student centrality applies to Bo's thinking about the future:

> *I think my responsibility is still to the students. This gives me a sense of achievement. If I teach this class well, I will be happy all day long. I do not necessarily have to become a leader to realise my value. I do not think so. I value the connection between students and me, or students' recognition of me and my class. [Bo]*

Bo's case is interesting in terms of ambitions as Bo extracts no pleasure from ambition, contrasting with Cai's competitiveness and preparedness to play a professional game. The above quote clearly exhibits Bo's agency in curriculum making is not related to any career ambitions. What will motivate Bo remains what motivated them before. Bo also derives no pleasure from an ambition or competing with other teachers. Zooming in on pre-Reform teachers' imaginations shows that Alex and Cai may have clearer movements and frame their steps more clearly than Bo, yet Bo's agency in curriculum making maybe more driven by getting their students' recognition than achieving their own career ambitions. What stands out is that Bo who entered teaching due to students' positive feedback still derives considerable satisfaction from student's praise and gratitude, while the other two "Lambert-aligned" teachers (Alex and Cai) do not even mention students in their career plans. The following section will further discuss this student-centred view with Bo's current affordances in their environment.

As for the two pre-Reform "Lambert Divergent" teachers, Da was not ambitious about their future career. Da became the new Head of the Geography Department from the 2021-22 autumn term. When asked to imagine "what would it be like in five years?", Da responded:

> *I feel I would feel quite busy at work in my school… first, different phases would have different challenges; second, my school would push me to move forward. It is hard to say, but I think there will be new challenges […]as for ten years, I have never thought about it yet. [Da]*

Eli was ready to play the professional game to get on, like Cai. Although Eli claimed to be "an ordinary teacher", they actively submitted materials to get a higher teacher professional rank, which included teaching materials which showed their creativity in curriculum making. The fact that Eli performed to a higher professional rank promotion did not demonstrate teacher agency for curriculum making, but their knowledge in navigating a system. Because the difference is that the projective dimension of agency means the social actor can visualise alternative futures in their practice, but Eli did not seem to imagine anything different:

> *Five years later, I really did not think much about it. Because I think in most circumstances, teachers' job is relatively stable. That is, basically, year after year, every year is almost the same. We teach, maybe write some articles, take part in research projects, participate in activities organised by master teachers. Mainly these aspects. I participate in these aspects, but not very actively. I do a bit of them. It is my personal choice. At that time (five year later), I will be elder, it is enough. [Eli]*

Unlike Da who expected that there would be changes beyond their control, Eli seemed to be confident that the future would be "almost the same" and did not anticipate any changes. Arguably, Eli had prior knowledge stocked, but the narrative Eli constructed did not seem to develop " a sense of movement forward in time" (Emirbayer and Mische, 1998, p. 989), nor did they recompose different possible trajectories, let alone providing *hypothetical resolution*.

The post-Reform teachers also all mentioned getting professional ranks in their future plans, however, none of them had any ambitious plans. They were presumably less experienced in their career than the pre-Reform cohort, hence they had less time to think about what the progression might look like. One of the reasons may be related to their schools' management:

> *In Shanghai (schools), Head of Department is arranged in order of seniority. Our current Head will retire next year. Then there will be a new one. The new Head is two years older than me. Hahaha, and he is a male colleague. He retires later than me*[30]*. I hope… anyway, I do not think much about future, do not think that much. [Fay]*

> *There are so many things out of my control. (I want to focus on teaching but) I will follow the school's arrangement for me. Right now, I am in a state of 'lying down'. […] I hope that after ten years, I am not lying down like what I am doing now. [Kit]*

In the above quote, Fay bit her tongue after describing the promoting system favouring "seniority" and "male". Her hesitation suggests a lack of systematic support for female teachers to climb up in the education system. This is very different from Cai who is open about his ambition in navigating the system. In other words, teachers' gender difference may play a role in their imagining alternatives in their future career trajectories.

[30] In China, the statutory retirement age for a male is 60, and for a female is 55. It applies to teachers in state-owned schools.

In the case of Kit, she chooses to use a popular metaphor among young people in China to describe her status: following the school's arrangement and not planning anything in her own wishes. "Lying down" implies a supplicant position and lack of agency. It is not just lack of agency in curriculum making, but lack of agency in general. In China, this word usually comes up when the young people feel overwhelmed by the pressure of work, to describe that they no longer want to compete with others to fight for an opportunity to be successful in their career. To some extent, it is the opposite side of ambitious. However, it can be argued that "lying down" is also a language of resistance. It is a choice to not get involved in the competitions that the higher-ups or the society expect the juniors or youth to act like. What Kit expected in ten years also expressed a sense of *experimental enactment* (Emirbayer and Mische, 1998), which means that teachers connect their tentative actions as a response to the current situations. Kit's lack of agency in curriculum making is part of her agency absenting in her work, which is likely to be related to the school arranging her jobs without considering what she really wants to do, yet Kit cannot say no to the school arrangement as an employee.

8.2.3 Cross-Cohort summary

Both cohorts have a difference between teachers who studied undergraduate ITE and those who did not. The former group are "Lambert-aligned" teachers, who seem to have clear visions of what they want to achieve, while the latter "Lambert Divergent" teachers are less imaginative. It is vital to note that pre-Reform teachers have developed a more extensive range of resources for their teaching as well as networks before the Reform when there was low pressure on students' performance (see more in Chapter 6.3 p.126). However, the post-Reform teachers started their careers with high pressure to ensure students' Gaokao performance. The post-Reformers did not get as much support as the pre-Reformers due to the different entry time to teaching. In other words, this difference in the iterational dimension may enable or limit the teachers in imagining their career visions.

There is also a striking similarity between Bo and Kit in the lack of ambition as resistance, which both Bo and Kit demonstrated, but in different ways. Bo's lack of ambition was more of a choice to focus on classroom teaching rather than playing a professional game. Kit "followed" the school arrangement against her wishes. Her lack of ambition can be interpreted as her passive approach to resisting the arrangement.

The “Lambert Divergent” teachers in two cohorts are also similar to each other. They all assume that their teaching will be repetitive as they will use the new textbooks for decades. Da and Kit both think their job at school will be busy because of the school arrangement. In other words, they are not planning much about their future as the school’s arrangement is beyond their control. Hence there is no need to imagine their future; they take teaching as repetitive work, hence they do not see much scope to imagine different ways of teaching. In a nutshell, the imagination of their futures is restricted because they see teaching as a routinised job rather than a career which they can advance through professional development. The restricted imagination constrains the “Lambert Divergent” teachers from appreciating professional development beyond examination orientation, hence taking an instrumental view of teaching.

8.3 Practical Evaluation: Teachers' responses to changes in September 2021

Although I started my research in a context where Geography Gaokao took place in Year 11, in the period of data collection, a major change happened. The Shanghai Municipal Education Commission (2021) announced a policy to put the assessment of Geography back to Year 12 with other subjects at the end of August 2021. It meant an excellent timely opportunity to examine teachers' agency and capacity to respond to unforeseen changes.

This section looks at what teachers did in September 2021 in response to the changes, in order to investigate teachers' responses to changes reveal their agency (or lack of it) for curriculum making. It draws on teachers' diaries and interviews in September and October 2021 to investigate their current situations. The major change instantly reduced geography's status in all participant teachers' schools from September 2021 (see Table 8.1 and Table 8.2).

Table 8.1 Changes of Geography Examination Time

Year 10 enrolled time	**Before Sep 2014**	**Sep 2014-Sep 2020**	**Sep 2021- now**
Time of Geography Qualifying Test[31]	At the end of Year 10	At the end of Year 10	At the end of Year 11
Time of Geography Gaokao (Level Test)	At the end of Year 12	At the end of Year 11	At the end of Year 12

Table 8.2 Participant schools' Year 10 Geography Weekly Contact Time

Geography periods	**Pre-Reform cohort (previous→ Sep 2021)**	**Post-Reform cohort**
Cancelled entirely	Alex (3→0), Bo (2.5→0), Da (3→0)	
Reduced two periods		Fay (3→1)
Reduced one period	Cai (4→3), Eli (3→2)	Gal (3→2), Hui (2→1), Kit (3→2)

[31] The Qualifying Test was first introduced in Chapter 2, Section 2.1, p. 13. Although this study is mainly about Gaokao, the Qualifying Test time matters here. First, if one wants to choose geography as their Gaokao subject, they need to first pass geography's Qualifying Test. The Qualifying Test applies to every student in Shanghai upper secondary schools who wants to have a graduation certificate. Geography is one of the subjects. Second, the current time of the Qualifying Test showed that Gaokao took place a year after the Qualifying Test from Sep 2014, which was continued in September 2021. The Qualifying Test time in Year 11 made it possible for some schools to cancel Year 10 geography classes in September 2021 and only teach geography from Year 11.

Before proceeding to the excerpts from participants' diaries and interviews, a brief overview on how Priestley *et al.* (2015) theorise the practical-evaluative dimension of teacher agency:

> *The practical-evaluative dimension of teacher agency* relates to the day-to-day navigation of present contexts for action. Agency is achieved in the present and is shaped by the nature of those present-day contexts. Mediating factors are social (cultural and structural) as well as material. Teachers' responses to policy interventions will be both shaped by practical considerations (i.e. what is possible given available resources) and by evaluative considerations (e.g. by judgements of risk), and these are framed by their belief systems. (p.131, emph. original)

The quote is helpful to inform this research to look at teachers' response to the changing policies with teachers' belief systems, as well as the physical environment and resources. Two themes arise from my data:

- Cultural and Structural: Teachers' flexibility to the changes
- Material: Access to professional resources

8.3.1 Cultural and Structural: Teachers' flexibility to the changes

This section shows that "Lambert-aligned" teachers have the flexibility to embrace and capitalise on change, while the "Lambert Divergent" teachers seem to be concerned and reluctant. The pre-Reform cohort will be discussed before the post-Reform cohort. Excerpts from participants' diaries and interviews to show teachers' different flexibility in response to the changes. The teacher agency model (Priestley et al., 2015) and the structure of practical-evaluation *enactment* (Emirbayer and Mische, 1998) are then used to interpret the excerpts to explain why this relationship impacts teachers' achievement of agency.

Although Alex, Bo and Da's schools all moved to cancel Year 10 geography periods, the teachers perceived this change differently. For Bo, this cancellation was just their school's another "experimental move" regrading teaching efficiency, they did not even comment on it. Alex embraced this change in a positive attitude:

> *The coming year is a crucial year for textbook transition. Therefore, in this year, the focus on new textbooks is not only the content, but also teaching methods. Because new textbooks, just like the chief editor of the new textbooks said, 'if new textbook are taught in the same way like before, then the meaning of new textbooks is diminished'.*

> *So, this transition from the content to teaching methods, I can pay more attention to this (transition) as I do not have classes to teach. This is also what our school leaders expect from me this term. They trust me in training myself. [Alex]*

Several issues jump out from Alex's quote. First, Alex took the opportunity to align herself with the textbook editor. Alex referred the chief editor who had a certain expectation of teachers as curriculum makers, which may imply an intention to her words more convincing. Second, even though Alex lost classroom contact time, she saw this as an opportunity to focus more on teaching methods. Both indicate an integration of cultural and structural aspects in the practical-evaluative dimension. The former means ideas held collectively in the group (Archer, 1996). The latter means "systems of human relationships among social positions"(Porpora, 1989, p. 195), in other words, how people are situated in relation to one another. The way Alex relates herself to her school and the textbook editor creates "trust" between them, which shows Alex's ideas align with the school and the authority who compiles the textbook for the reform. It is not common for teachers to receive support through flexible working hours dedicated to research and the development of courses and teaching methods. Alex values the "trust" and translates this into autonomy. Alex's belief system is coherent with their accessible resources. Alex do not evaluate any risk for her to do what she wants to do, because what she wants to do is also what her schools wants her to do.

The internal structure of practical evaluation (Emirbayer and Mische, 1998) provides insight into Alex's achievement of agency. First, her effort to study teaching methods before teaching the content shows that she has gone through the process of *problematization* (ibid, p.998), which means the social actors notice that they need "some practical judgement" (ibid, p.998) to resolve the unsettled situation at hand. Second, Alex justifying her choice of focus by referring to authority also indicates "*characterization"* (ibid, p.998), which relates current problematic situations to "typifications from past experiences" (ibid, p.998). In this case, Alex suggests that her school's cancellation of Year 10 classes gives her time to study the transition, instead of rushing to teach the content in the new textbook. She also refers to an authoritative figure to prove that she and her school are dealing with the situation appropriately. Either appealing to the authority or coincidentally thinking alike, Alex is confident that what she wants to do is also what the school expects from her. Thirdly, what Alex has done can be seen as "*deliberation"* (ibid, 998), which means the social actors consciously searching for the best response to "situational contingencies in light of broader

goals and projects" (ibid, p.999). Alex feel trusted by the school and has a clear focus for her work, which means she has turned this respect of her profession into her taking up the responsibility of being a curriculum maker. Overall, a good relationship between Alex and her school helps her to achieve agency for curriculum making.

However, Da faces a different situation to unwillingly comply with the school's arrangement. Even as the Head of Geography Department, Da did not feel they had a say when the School Academic Affairs Office notified them the cancellation. Da expressed their concern over new textbooks and lack of support from their school:

> *There will be only one year (after the Qualifying Test), and there will be a lot of new content too. Can students finish learning all of them? […] I cannot do anything, [hehe-nervous laugh] cannot do anything. These are just my predictions because I am busy these days. I do not have time. I think other schools may have started teaching (the new textbook), I can ask their teachers about their experiences. [Da]*

The quote above suggests that Da's school does not provide resources or the physical environment for Da to resolve their concerns. Although Da was not teaching the new textbook, Da was apprehensive. They saw the new textbooks as an additional burden on top of their already heavy workload. Da also predicted the challenge to teach students who opt geography for Gaokao in the future. This uncovers something about the school's relationship with Da. Da was not given resources to reduce their concern, and they judged the risk, decided to not go against the school's arrangement, even though it is against their wishes. In the second interview, Da also said that they had been "worked to death". However, they found it was not possible to articulate what occupied them at work. Da's weekly teaching was four lessons for a class of Year 11 students in the last cohort sitting geography Gaokao at Year 11 and two lessons co-taught with a colleague. What kept them busy was attending their school's conferences, submitting workplans and materials to preparing for a whole school inspection. It seemed like that the trust between Da and their school was not as strong as Alex and her school. Da felt the change had been imposed on them. Da was unhappy with it but felt that they could not change the situation.

The same concepts that usefully explain Alex's achievement of agency also explain what hinders Da to achieve agency. Da being exam-oriented in teaching is a product of cultural and structural factors. It is cultural because Da has internalised this idea into their values and

uses the language of exam-orientation to think about teaching geography even in a new context. Examination language is the only language that Da had to think with. It is also structural as this exam-orientation comes from a highly performative schooling system. If social structures do not give power to Gaokao, Da may not highlight teachers' role to prepare students for it. Secondly, structural and material support is absent in Da's school.

The structure of practical evaluation (Emirbayer and Mische, 1998) gives insight into Da's lack of achieving agency for curriculum making. *Problematization* means the actors can recognise the current situation is unsettled and not the same as the previous situations. The changing Gaokao policy has made geography Gaokao less important for most students. However, Da does not recognise this. Da still clings to students' Gaokao performance when the exam system no longer prioritises geography Gaokao.

Moreover, Da comments on the new textbooks for not being properly designed for Gaokao. By not recognising that the textbooks are actually not designed for examinations, Da fails to value teaching for understanding, and so they cannot grasp how the new textbooks work. This contrasts with Alex who quotes the textbook chief editors' words to argue that the new textbooks need considerable teacher curriculum making. To put it in another way, Da's existing view limits their agency for making the curriculum beyond exam-orientation. Even after the removal of exam-orientation at the policy level, Da already internalised the significance of examination as their teacher responsibility to students. Hence, Da cannot shift their thinking towards geography's intrinsic significance to students' development overnight.

Da's case is also an example of teachers working in an environment with "insufficient time to reflect and engage in professional dialogue with colleagues" (Priestley et al., 2015, p. 33). This is in contrast with Alex's situation, who has time to think and engage. At first glance, both schools cancelled Year 10 classes as a response to the change of geography's status in Gaokao. However, Alex and Da interpret the policy's effect on school differently in their interviews. The trust between Alex and her school facilitated her agency for curriculum making, while for Da being implicitly discontented with their school obstructed their agency.

Gal, a "Lambert-aligned" teacher in the post-Reform cohort, allows us to see a third response to the changes. Gal was aware that her school "wanted young teachers to be class tutors[32]" and she also agreed to take up this new role. She did not feel herself suited to this role, nor is she interested in pastoral work, but more as a self-preservation as she would have to take up this role "sooner or later". In China, for a school teacher to achieve a higher professional rank, they need to have certain years of experience as a class tutor. In the first interview before the school started, Gal thought her "class tutor and teaching work would be 50% each". She later realised it was not the case. Here is an extract from Gal's diary:

> *Recently, the work focus has shifted completely to class tutor work, so it is difficult to complete tasks that require long periods of concentration, such as lesson planning at school. The school time (apart from class tutor work) is only enough for correcting students' homework. Lesson planning is basically only done at home. [15/09/2021]*

An interactive relationship between cultural and structural factors is visible in Gal's case. Gal values her teaching and takes extra time to catch up with her work, which is a cultural factor. However, the fact that she needs to use her spare time to prepare teaching means a lack of structural support at school, especially when teachers take up new roles. Gal's agency for curriculum making still survives but her school's approach to running a school is not sustainable. For example, teachers with caring duties after work may be unable to do what Gal does, but does this mean they are less agentic? If teachers can only achieve agency by taking up more time and effort outside workhours, then praising this kind of teacher agency without awareness of a structural misuse is problematic. When the social structures do not provide structural support for teachers to achieve agency, yet some teachers still managed to find an approach for them to achieve, it does not mean the structure did not suppress agency.

The work of Emirbayer and Mische (1998) is helpful to unpack the structure of Gal's agency. Gal found time after dinner to do her lesson planning, which can be seen as piece of evidence for *decision* and *execution*, both are components of the practical-evaluative dimension. *Decision* means an actor "acts here and now in a particular way" (Emirbayer and Mische, 1998, p. 999) a resolution to present circumstances. It is visible when Gal chooses to use

[32] Class tutor role in China means a teacher not only teaches this class but also takes responsibility for the students in this class, such as their performance, wellbeing, participation in school activities and communications with parents. This role is known for dealing with lots of small unpredictable incidents within and after school hours.

after-school time to do her work as a geography teacher, to make up the time she perhaps should have got at school. *Execution* entails the actor having an executive capacity to do things that move towards the goal they have set for themselves. For Gal, it is her personal ambitions to teach geography well. Gal considers bringing teaching preparation work home was her only choice so that she can execute to fulfil what she understands as a duty of being a geography teacher. Noticing this is vital for unpacking teachers' agency for curriculum making for two reasons. First, agency in this instance seemed to be an overwork resolution to a situation that could be resolved in other ways, instead of relying on one's dedication; Second, agency for curriculum making could lead to new problems for individual's overwork and wellbeing at work.

To sum up, the three examples of Da ("Lambert Divergent" teacher), Alex and Gal ("Lambert-aligned" teachers) showed that three possible relationships between teachers and their schools each had an impact on realising their agency for curriculum making. Alex's case conveys a virtuous circle that the more power and trust teachers receive in their roles and relationships with schools, the more agentic they are. If the school does not respect teachers in their decisions, some teachers may find a way to keep their agency, but some may not.

8.3.2 Material: Access to professional resources

This section shows that "Lambert-aligned" teachers choose more diverse ways of professional learning to improve their professional skills than "Lambert Divergent" teachers. It follows a similar structure to the previous section with a summary of findings, quotes and analysis. Table 8.3 gives an overview of case findings, featuring teachers' answers to the interview question: "What are the channels and resources that you get information about geography curriculum and teaching?"

Table 8.3 An overview of case findings

Cohort	**Name**	**ITE phase (Alignment to the Lambert model)**	**Where they get information about geography curriculum and teaching**	**Professional networking preferences (see Chapter 6.3)**
	Alex		Publications; showcase lessons; exam papers; GMTH	Collaborative and agentic

Pre-reform	Bo	Undergraduate (Lambert aligned)	Colleagues; Publications; Social media; showcase lessons; GMTH	Collaborative and agentic
	Cai		Colleagues; Showcase lessons; exam papers; GMTH	Collaborative and agentic
	Da	Postgraduate (Lambert divergent)	Colleagues; Social media; Showcase lessons	Performative and exam-oriented
	Eli		Colleagues and friends; Showcase lessons	Performative and exam-oriented
Post-Reform	Fay	Undergraduate (Lambert aligned)	Colleagues; showcase lessons; social media; publications	Collaborative and agentic
	Gal		Colleagues; showcase lessons; social media; publications	Collaborative and agentic
	Hui	No ITE (Lambert divergent)	Colleagues; ready-made slides; showcase lessons	Performative and exam-oriented
	Kit		Colleagues; ready-made slides; showcase lessons	Performative and exam-oriented

Table 8.3 clearly shows that "Lambert Divergent" teachers (Da, Eli, Hui, Kit) are less enthusiastic in curriculum making and came up with fewer resources than "Lambert aligned" teachers. Their teaching philosophies are mainly shaped by the examination, and the post-Reform "Lambert Divergent" teachers count on ready-made slides to teach. The "Lambert-aligned" teachers have chosen to give themselves a much broader range of choices. Within them, pre-Reform teachers (Alex, Bo and Cai) come up with more usages of resources than the post-Reformer (Fay and Gal). The following excerpt helps to explain how teachers' frequently used resources shape their agency for curriculum making:

> *For teaching, when I just started, our senior colleagues in the (geography) department directly gave me their lesson plan resources. I then updated based on my needs, such as updating current news in the same year. For Gaokao, previous years' mock exams and past papers are collected to build a question bank. Of course, this work is not done by myself. Because we share all these resources within the department, the work is not an individual's work, we all do it together, including preparing lessons, providing exercises and quizzes, we all do it together. [Da]*

Da's quote conveys a key message that the hierarchical work within their department passes from experienced teachers to the younger ones with a focus on exam-orientation. Notably, Da started with "they" and "I" but shifted to "we" regarding Gaokao. The shift suggests Da internalised the department's exam-oriented view of geography curriculum. Da's lack of agency in curriculum making is not due to an absence of professional networks, but working in a professional community with a strong homogeneity of exam-oriented teaching. What Da described as a 'share' and 'together' work vibe in their department is a very top-down approach. It does not encourage one teacher to be agentic in their own way if their way does not align with the department's general direction. If the department has an existing exam-orientation, for the individual teacher to get along with the department, the only route is to be assimilated to this orientation. That is probably why Da rarely used "I" in their explanations.

Similar to Da, the other three "Lambert Divergent" teachers also frequently mentioned "share". In Chapter 6.3, I already showed that Eli and their friends "shared" slides with each other. In the post-Reform cohort, Hui and Kit's departments also shared their slides with each other. However, in Hui's case, she was the person to share with her senior colleague who was in the school leadership team. Hui did not make slides by herself either, she mainly tweaked others' slides, which was evident from her descriptions of how she found resources:

> *Mainly through WeChat account, such as those posting slides. They have ready-made slides for me to download or purchase, which is much more convenient. As for the deeper geographical knowledge, now I am too tired to read. I read the popular science articles about Chinese geography posted by my subscribed accounts. [Hui]*

Hui's quote indicates that her slides may be sourced from other people's artefacts. Forming a habit of using ready-made teaching materials could have the potential to diminish one's professional learning, which may restrict one to achieve agency for curriculum making. The challenge is that even though the situation has changed, Hui still holds on to a particular habitual activity to respond, indicating "*characterization"* (Emirbayer and Mische, 1998, p. 998) where current problematic situations are related to "typifications from past experiences" (ibid, p.998). This is a product of Hui's lack of access to cultural, structural and material support in her network in and outside school. Mitchell (2017) brought a social-economic lens to look at how late capitalism performativity marketised schooling and squeezed out teachers' freedom to make meaningful decisions. Although Shanghai is a different context,

the challenges Hui faced were not different to English geography teachers who have to teach the statutory National Curriculum as a consequence of managerial and bureaucratic control over teachers. In Chapter 6, we already knew that when Hui was preparing to teach the New Textbook to Year 10, her headteacher informed Hui at short notice to also teach Year 7 classes. Structural support was also absent after Hui's induction year. Hui, who neither studied geography for her Gaokao nor studied undergraduate ITE, was pushed to teach geography by the environment. The teaching vocation attracted her to have two holidays and a stable position (see Section 6.1). However, she was not prepared nor taught to prepare for the challenges of teaching. The "tiredness" Hui feels at work is burn-out in a system which did not provide her with the affordances to navigate in the present contexts for action.

The "Lambert-aligned" teachers suggest two different ways of using resources, indicating their awareness of 'finding' resources to improve their professional skills:

> *I think if a teacher wants a deep development, there must be some theoretical underpinnings. In other words, one needs to know what is being researched. Therefore, I signed up this PhD to know what are the research frontiers in the field of geography education in Shanghai? I read textbooks like Geography Didactics. I was supposed to have learned some as an undergraduate student. But at that time, I did not want to be a geography teacher, so, the content was relatively new to me. [Alex]*

> *I prefer two types of WeChat (social media) accounts: the accounts post videos of geographical experiments and the accounts post exercises and quiz items. [Gal*]

Putting the two quotes together shows the difference between the pre-Reform "Lambert-aligned" teacher (Alex) and post-Reform "Lambert aligned" teacher (Gal). They both studied undergraduate ITE. However, Alex used to not appreciate the value of educational research as an undergraduate student, and only started to appreciate it after working at school. We see in Chapter 6 that Alex attempted to start a PhD programme in education. While Gal made up her mind to teach and studied well as an undergraduate student, she did not seem to think much about the "theoretical underpinnings". Gal's social media preferences suggest a more instrumental rather than intellectual focus. This difference is likely to be influenced by the social structures they face. Alex started teaching before geography was a popular subject when she should explore more widely the meaning of geography education. However, Gal's teaching journey started when geography was chosen by a large proportion of students for the

strategic advantage it gave them in the Gaokao. Gal did not have the luxury to explore geography didactics freely because she entered a teaching profession which was already burdened by the performativity pressure of the Gaokao.

The internal structure of practical-evaluation helps to unpack the above quotes. For example, Alex's choice of developing her profession is based on her *problematization* of her situation. When she found her current circumstances problematic, her solution was to look back to what she had experienced before, which is higher education. Through her attempts to continue her education and read academic publications, Alex then made a *decision* to stay in her job but also keep learning and maintain her connections with higher education. This is a deliberative choice after weighing choices given "broader fields of possibilities and aspirations" (Emirbayer and Mische, 1998, p. 998). Considering her previous comments on new textbooks, it is likely that her revisiting of geography educational research played a role in her executive capacity to "act rightly and effectively within particular concrete life circumstances" (ibid, p.999). However, the other three examples (Da, Hui, Gal) did not highlight problematising the situation's unsettledness. Their lack of expression on their access to professional resources beyond school indicates that their physical environment (i.e. their school contexts) may not encourage them to think in this way.

8.3.3 Cross-Cohort summary

Like the iterational and projective dimensions, the practical evaluative dimension also presents a difference between pre-Reform and post-Reform teachers. However, what is new in this dimension is the combination of cultural and structural aspects. A teacher's achievement of agency for curriculum making is not just their own ideas (individual), but also connected to shared understanding within the schools they work in (cultural) as well as relations internal (e.g. the relationship between school leaders and subject teachers) and external (e.g. their professional networks) to the school (structural). The development of an individual's agency may be unsustainable in a hostile environment which does not appreciate their dedication and passion for teaching. The accountability and performativity pressure in the schooling system are obstacles to teachers' achievement of agency. However, even when they are removed at the policy level, teachers' formed habit of exam-orientation may not be easy to uproot in their curriculum practice.

8.4 Conclusion

Here I provide a diagrammatic representation of my findings on teacher agency for curriculum making in an adaptation with the ecological teacher agency model (Figure 8.3). I list the factors I have found in my study and also put space to indicate other factors not covered in this analytical chapter[33].

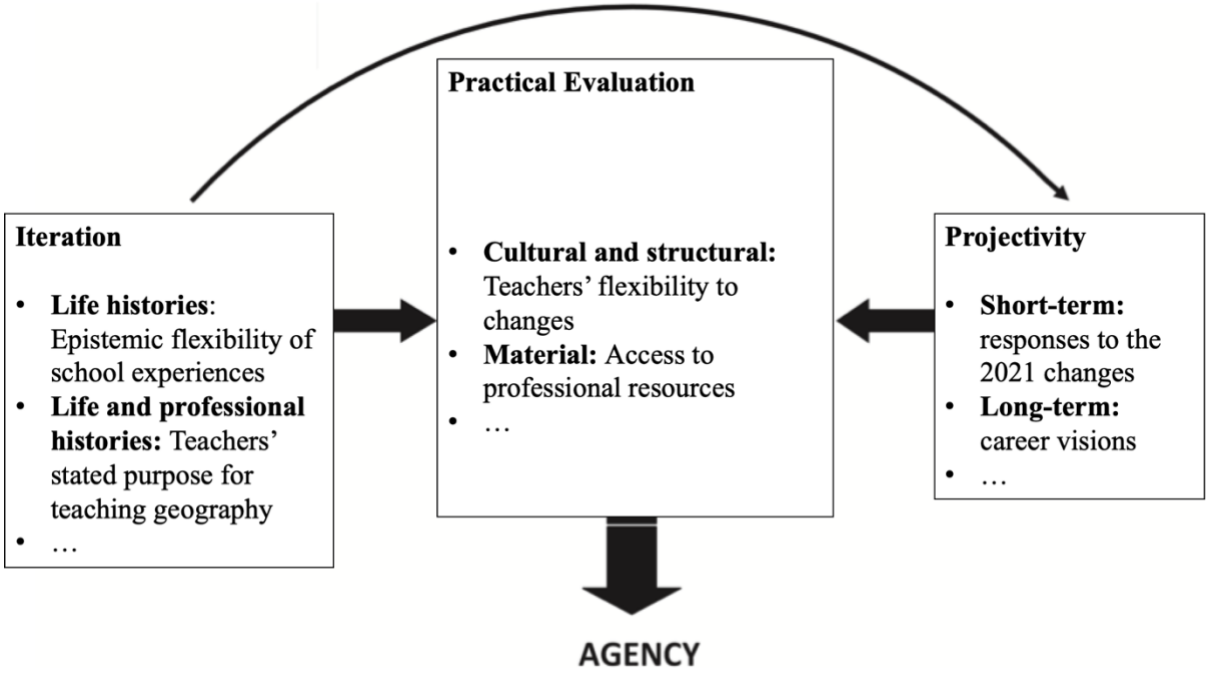


Figure 8.3 Representation of my findings in the ecological teacher agency model

Investigating the iterational dimension reveals two factors affecting teachers achieving agency for curriculum making. One is pre-Reform teachers' epistemic flexibility of their schooling experiences. Addressing the dilemmas and problems in the relationship between academic geography and school geography could be an opportunity to extend grounding for teachers to enhance epistemic flexibility. The other is Post-Reform teachers' stated purposes for teaching geography. While the "Lambert Divergent" teachers oriented their teaching towards the examination, the "Lambert-aligned" teachers saw more dimensions of their teaching vocation. Extending teachers' understanding of their teaching purposes beyond the test helps teachers to achieve agency for curriculum making.

The projective dimension provides two insights into facilitating teacher agency for curriculum making. One is about teachers paying more attention to the changes that they can

[33] Due to word limit, I only present the major factors emerged from data. My plan is to write articles for other additional findings.

be part of it, instead of staring at the policy changes that they cannot do anything about. Although most teachers would not be involved in deciding when geography Gaokao takes place, each teacher can think about what they are teaching geography for, and actively interpret the benefits of policy change. The other is about having a clear idea about what they want, whether it is ambitious or humble, having an idea of what they want to achieve in the future motivates teachers to be agentic curriculum makers.

Finally in the practical evaluative dimension, two factors impact on agency for curriculum making. First, teachers' flexibility in response to changes helps teachers to be more agentic when the changes take place. Teachers felt trusted by their school have more flexibility to actively respond to the changes, while teachers in tension with their school felt powerless to be responsive to the changes. Second, diversifying teachers' access to professional resources can be a powerful tool to help teachers go further with curriculum making. However, the lack of access to professional resources is not solely due to teachers' lack of effort, but a highly performative system which drives teachers to focus on assessment. A new way to imagine the schooling system's focus could be a start to make the cultural, structural and material environment more supportive for teachers to achieve agency for curriculum making.

9 Discussion

This chapter identifies key findings emerging from the data aligned with questions that guide this study. Five such key findings are identified. It then returns to the research questions and explores the implications of these key findings for our understanding of the research questions. In the second section, I discuss the relevance between research questions and key findings. I then conclude my study in the third section by outlining its original contributions with implications and reflections on the limitations, ending with imagining next steps.

> RQ1: In what ways do Shanghai geography teachers conceptualise geography curriculum and curriculum making?
> RQ2: To what extent do Shanghai geography teachers' curriculum making conceptions align with the Lambert model?
> RQ3: In what ways does Shanghai geography teachers' agency influence their curriculum making?

9.1 Five key findings

Allowing for the limitations of a tiny sample size (nine teachers), speaking purely from a qualitative paradigm, there is strong evidence of five connected key findings:

> **Key finding 1: Undergraduate Initial Teacher Education (ITE) supports teachers to develop sophisticated geography curriculum making.**

> **Key finding 2: Teachers who are motivated predominantly by employability are less likely to develop a sophisticated understanding of curriculum making.**

> **Key finding 3: Post-Reform teachers (who started teaching after Gaokao reform) develop less sophisticated curriculum making models than the pre-Reformers.**

> **Key finding 4: With respect to the universal applicability of the Lambert model, the biggest factor limiting its usefulness in a Chinese context is the influence of the Gaokao.**

Key finding 5: Teachers' epistemic flexibility is a key determining factor of their agency in curriculum making.

This section develops each key finding with explanations.

Key finding 1: Undergraduate Initial Teacher Education (ITE) supports teachers to develop sophisticated geography curriculum making.

Key finding 1 emerges from teachers who studied undergraduate ITE, applicable to both cohorts. The five teachers not only envision sophisticated geography curriculum making models, but also demonstrate agency in curriculum making practices. The ecological teacher agency model (Priestley, Biesta and Robinson, 2015) helps to interpret this finding with three possible reasons. One reason is *iterational*: they chose teacher education. When filling in their university applications, three of them chose this major because they wanted to be geography teachers, the other two were interested in a teaching career. Another reason is *practical-evaluative*: their diverse professional networks. This finding resonates with Priestley. M. et al (2015), Hizli-Alkan and Priestley. M. (2019), and Ramjan and Priestley. A. (2023) to clarify the significance of extended professional networks across meso-sites beyond schools. The opportunity to study over a period of three or four years allows people to develop extended networks that would allow them to seek support and make curriculum once they are qualified. The third reason is *projective*: they all want to improve their professional ranking as geography teachers to gain professional recognition. In short, they have motivations and resources from three temporal dimensions to develop their understandings of curriculum making towards sophistication.

Key finding 2: Teachers who are motivated predominantly by employability are less likely to develop a sophisticated understanding of curriculum making.

Key finding 2 emerges from the other four teachers without undergraduate ITE backgrounds. The lack of sophistication among these teachers are related to them prioritising employability over other reasons for teaching themselves. They see themselves as delivering the given curriculum to students rather than creating it. The ecological agency model (Priestley, Biesta and Robinson, 2015) helps to interpret how and why employability drive prevent them from understanding curriculum making in sophisticated approaches. First, in the *iterational*

dimension, none of them studied geography for their own Gaokao when they were school students. Qualifying as a geography teacher and teaching geography was a practical choice to improve the employability of their geography degrees than necessarily following a passion. Their life histories did not provoke them to have much interest in developing their own ideas of curriculum making. The two post-Reformers did not even study teacher education, meaning a lack of formal professional education before entering the profession.

Secondly, in the *practical-evaluative* dimension, sophisticated understandings of curriculum making do not necessarily enhance teachers' employability. There is a misalignment between the aspirations held by Lambert and teacher educators more generally (including myself) for teachers to be curriculum makers and the practice that rewards teachers with financial and professional recognition. The schooling system pervaded by performativity highlighted teachers' skills in improving Gaokao performance when the 2014 Gaokao Reform had increased the uptake and significance of geography. The employers (schools) expected a certain form of curriculum making to effectively transform the planned curriculum into measurable lists of content based on how they were examined in the Gaokao. This form of curriculum making oriented towards examinations with standardised answers expected teachers to deliver a given curriculum to students. Teachers were not expected to develop sophisticated interpretations of the curriculum. To sum up, the fact that employers (and the schooling system as a whole) do not expect or value sophisticated curriculum making practices means that teachers mainly driven by employability do not invest in these practices.

Key finding 3: Post-Reform teachers (who started teaching after Gaokao reform) have less sophisticated curriculum making models than the pre-Reformers.

Key finding 3 applies to the post-Reform cohort, both to teachers with undergraduate ITE backgrounds and others who only sat NTCE to qualify as teachers. The post-Reformers' curriculum making models are not as sophisticated as pre-Reformers' models. In the ecological teacher agency model (Priestley, Biesta and Robinson, 2015), the raised status of geography in the Gaokao, which seems to restrict teachers' curriculum making opportunities, is part of the *practical-evaluative* dimension. In principle, teachers teach geography to students, and those who study the subject well will get good Gaokao scores as Gaokao is an examination to assess learning outcomes. In practice, teachers teach geography topics according to how the topics have been examined in past papers to orient students' learning

towards improving their Gaokao performance. As the increasing number of teaching positions in the post-Reform era is related to students' strategic choice for Gaokao performance, there is a pressure from the schools who employ teachers to teach to the test.

To take a step further, schools' employability preference is based on what students want. The increase of students opting for geography as part of their Gaokao happened only after the 2014 Gaokao Reform. Presumably if students only choose geography for Gaokao reasons then the students' expectations are that teachers should prepare them for the Gaokao. In this sense, the more exam-oriented teachers are possibly giving students what they want in a way that the less Gaokao focused teachers are not.

When teachers' engagement with the curriculum needs to prioritise Gaokao, sophisticated thinking of curriculum is not usually as efficient as teaching to the test. That is why despite the fact that more people entered the profession of teaching geography, and they came from diverse academic backgrounds, post-Reformers' interpretations were not as sophisticated as pre-Reformers'. When the spotlight was on geography Gaokao, post-Reform teachers were occupied with making the curriculum for Gaokao and this was also why they were employed.

Two potential reasons contribute to why post-Reform teachers with undergraduate ITE backgrounds did not portray curriculum making models as sophisticated as pre-Reform teachers who studied undergraduate ITE. First, the post-Reformers had fewer years of teaching experiences. Second, in spite of their *iterational* undergraduate ITE backgrounds (key finding 1), these teachers' *practical-evaluative* context of the policy is pulling them away from what they might have been. The Post-Reform cohort started teaching geography after the 2014 Gaokao reform, which provided more teaching positions at school and intensified teachers' teaching-to-the-test. The post-Reform context provides a less supportive structure for teachers to develop sophisticated understandings of curriculum making than the pre-Reform context. Teachers are dragged towards achieving less agency with the post-Reform context in which they work. The over-emphasis on Gaokao restricts and disciplines teachers' interpretations to be beneficial for improving students' Gaokao performance. Hence, none of the post-Reform teachers imagine triadic interactions between themselves, students and subject geography.

Key finding 4: With respect to the universal applicability of the Lambert model, the biggest factor limiting its usefulness in a Chinese context is the influence of the Gaokao.

Key finding 4 emerges from a comparison of pre-Reform and post-Reform teachers with the Lambert model. The Gaokao and the changed status of geography closed spaces for teachers to think triadic iteractions between themselves, students and subjects. The curriculum making models drawn by pre-Reform teachers have more similarities with the Lambert model than those drawn by post-Reformers. Two pre-Reformers described the same triadic interactions between teachers, students and subject without knowing the Lambert model. However, no post-Reformers described their relationship with students and subject as interactive, their models reflect the conduit metaphor of instrumental teaching, indicating a ripple effect following the Gaokao reform.

Gaokao has a washback effect (McEwen, 1995; Cheng, 2000) on students' learning outcomes in studying the curriculum and teachers' teaching. The frequently examined topics became the topics valued in classroom teaching. Considering the *practical-evaluative* dimension of teacher agency (Priestley, Biesta and Robinson, 2015) helps to see why the pre-Reformers' models resemble more of the Lambert model than the post-Reformers. The increased status of Geography in the Gaokao has raised the stakes: encouraging teachers to prioritise 'what works' and teaching to the test. This has restricted post-Reform teachers thinking about interactions when they entered the teaching career. Pre-Reform teachers seem less affected by these pressures because they had time in a pre-Reform context to develop more interactive understandings of curriculum making. Significantly, these more interactive curriculum-making models do not seem to make them any less effective at preparing students for the Gaokao. Overall, this finding suggests that the policy spotlight on Gaokao affects those who entered teaching in the post-Reform context but is not particularly influential to those who entered before the reform.

Key finding 4 shows practitioners' voices in what they understand as geography curriculum and visualises teachers' curriculum making conceptions. These drawings pointed out the possible cross-cultural transferability of the Lambert model, and its limitations as result of it not considering the social context. That is, the teachers' interpretation pointed out that teachers not only accommodate their choices, student experiences and school geography, they

are influenced by the washback of testing. My study investigates teachers work in a context spotlight on the Gaokao, which means teachers are restricted to consider what they can do with the curriculum for students' performance in the examination. The process of discussing their interpretations also shows that one's understanding of geography curriculum making is not static and may evolve with their career stage or to fit into the social context. To encapsulate, key finding 4 further develops Mitchell's (2017) call for noticing the wider context for teachers' curriculum making, and also calls for future research to see and discuss the potential of teachers' agentic role in curriculum making.

I use the terminology from Stengel (1997): "continuous" (p.593) and "different but related: discipline preceding" (ibid, p.595) to describe teachers' understandings of geography subject and geography discipline in the models. However, key finding 4 indicates Gaokao's crucial role in this relationship. Geography teachers who teach geography as a school subject value geographical knowledge being assessed in Gaokao. Geography Gaokao is traditionally considered as an examination taken by students opting for humanities majors. However, the geography discipline in Chinese universities is categorised as a science. Applicants taking geography Gaokao are not always eligible to apply to university majors in geography. That is, there is also a "discontinuous" (Stengel, 1997, p. 594) dimension in the subject-discipline relation in China as a result of Gaokao's washback effect.

Key finding 5: Teachers' epistemic flexibility is a key determining factor of their agency in curriculum making.

Key finding 5 applies to all teachers and features four Pre-reform geography teachers who studied sciences at school as epistemic flexibility first appeared in Chapter 8 (p. 173) to differentiate them. While two "Lambert-aligned" teachers understand that geography operates different rules of verification than physical sciences in knowledge production, the other two "Lambert Divergent" teachers cling to a narrow positivism view to privilege knowledge production in physical sciences. Epistemic flexibility refers to an individual's ability to recognise different but equally valid epistemologies.

Achieving epistemic flexibility means teachers do not hold on to their habitual thinking, and are open to change their mind as they evolve and develop epistemic models as times change. Hence, although epistemic flexibility was first found in analysing the *iterational* dimension

of teacher agency (Priestley, Biesta and Robinson, 2015) for curriculum making in Section 8.1.1, the influence of it is visible in the *projective* and *practical-evaluative* dimension. For example, the two pre-Reform teachers with epistemic flexibility are also two teachers who had clear career visions, flexible to changes, have access to professional resources, while the other two pre-Reform teachers who cling to a narrow positivistic view of sciences are performative and exam-oriented in both teaching and professional networking. That is, epistemic flexibility has roots in how teachers interpret their life histories, but also has a role to influence teachers to understand their current situations and imagine future possibilities.

Extending the discussion of epistemic flexibility to the other five teachers are important in three ways. First, the three teachers who studied geography Gaokao and geography degrees with teacher education programmes also achieved epistemic flexibility. Their school and university experiences helped them to appreciate that geography bridges humanities and sciences, implying epistemic flexibility to recognise different rules of verification. Second, epistemic flexibility did not guarantee an achievement of agency for curriculum making. Despite the two post-Reform teachers who studied sciences recognise geography as a combination of sciences and humanities, they still taught in exam-oriented ways and considered themselves as curriculum deliverers (see Section 8.1.2, p.179). Thirdly, despite the post-Reform teachers who studied geography Gaokao and undergraduate ITE noticed the washback of testing, which brought challenges for them to try agentic curriculum making practices, they still found time and effort to do it and recognised the significance of it. Although they developed less sophisticated curriculum making diagrams than pre-Reform teachers, the teaching materials they provided and classroom stories they shared showed their agency in curriculum making. They still managed to achieve some agency even when their agentic work did not get them much credit in a system emphasising performativity. Overall, epistemic flexibility facilitates teachers' achievement of agency for curriculum making, but other factors (such as employability drive; Gaokao washback) could influence its facilitation.

Discussion of key findings

It is important to notice the key findings' connections and how they influence each other. During the interviews, participants with undergraduate ITE backgrounds (key finding 1) expressed more humility and hesitation, while teachers mainly motivated by employability (key finding 2) performed more assertion and authority. The former spent longer time in communicating with me on constructing their curriculum making models, carefully

considering which way is closer to their understanding, the latter quickly gave clear instructions for me to make the diagram following their orders. None of the teachers knew the Lambert model, but the former teachers' diagrams turned out to be more "Lambert-aligned" than the latter. However, the post-Reformers' diagrams were less sophisticated than pre-Reformers (key finding 3) and less aligned to the Lambert model (key finding 4). The Gaokao washback effect impacted the post-Reform cohort more than the pre-Reform cohort. However, key finding 5 highlights that teachers' epistemic flexibility enables teachers to achieve agency for curriculum making regardless of the changing times. Although the post-Reform teachers have not achieved as much as pre-Reformers, they have potential.
In both cohorts, "Lambert-aligned" teachers studied undergraduate ITE. They were open-minded to talk about how they had changed, and passionately shared details that they could recall in preparing their teaching and interactions with students. They wanted their students to achieve high scores in Gaokao, but they did not define their students by their exam results. "Lambert-aligned" teachers were aware that the Gaokao spotlight had a significant role in students opting for geography, but they also believed that the geography subject they teach could offer a unique contribution to students' educational journey even when many of them started by electing it as a strategy.

Comparing to them, the "Lambert Divergent teachers" seemed to achieve less epistemic flexibility, suggested by their clinging to sciences in a positivistic way, and their acceptance of preparing students to achieve their best Gaokao performance as their major responsibility as teachers. They were four teachers who studied sciences Gaokao, and did not study undergraduate ITE, and entered their career with an employability drive. Their sense of achievement in teaching came only when their students performed well in Gaokao.

At first glance, it seems reasonable that geography teachers want their pupils to do well in geography Gaokao. However, it is dangerous when teachers only think of their students as examinees. In this way, they are more likely to be short-sighted, only seeing the qualification function of their teaching, and ignoring the two other functions they can contribute to education through their teaching: socialisation and subjectification (Biesta, 2017). The lack of epistemic flexibility makes it difficult for these teachers to appreciate the meaningful balance of the three functions of education could co-exist in their educational practices.

That is, if teachers have achieved epistemic flexibility, they are likely to achieve agency for their curriculum making regardless of the changing contexts. However, if the working environment did not restrict teachers into an exam-oriented curriculum practice only, they would have achieved more agency for sophisticated curriculum making than in an exam-oriented context. If teachers have not achieved epistemic flexibility, but are acutely aware of employability brought by Gaokao, their agency for curriculum making is restricted to what they think is Gaokao related.

Each key finding can be interpreted using the ecological teacher agency model (Priestley, Biesta and Robinson, 2015), reflecting the heuristic potential of the model. The findings also challenged the model which does not fully consider how teachers interpret their experiences in a more dynamic way. Because today's *practical-evaluation* will be tomorrow's *iteration*, and today's *projection* may become tomorrow's *practical-evaluation*. I am intrigued to return to the teachers in the future and ask the same questions. In addition, there is an emerging sense of a spatial dimension to teacher agency. As a researcher, I adapted to the Covid-19 situation and organised my interviews online, creating a space just for the participants and me to have interactions and conversations. It is different from previous studies on teacher agency in which researchers can visit schools and teachers in person. However, this temporary space for teachers to show up as volunteers to talk about their life and work with a researcher means an alternative space than their daily life. I have been wondering to what extent their engagement in my research would become an event in their *iterational* dimension of agency. To the point, teachers' views on agency and curriculum making are not only developing in temporal dimensions, but also perhaps in spatial dimensions.

9.2 Relevance of Key findings to research questions

This section addresses how these findings answer my research questions:

> RQ1: In what ways do Shanghai geography teachers conceptualise geography curriculum and curriculum making?
>
> RQ2: To what extent do Shanghai geography teachers' curriculum making conceptions align with the Lambert model?
>
> RQ3: In what ways does Shanghai geography teachers' agency influence their curriculum making?

9.2.1 RQ1 addressed using key findings

> RQ1: In what ways do Shanghai geography teachers conceptualise geography curriculum and curriculum making?

RQ1 is addressed in three key findings. They are three main factors influencing participant teachers in conceptualising curriculum and curriculum making:

- whether they studied undergraduate ITE or not (key finding 1)
- whether they entered teaching mainly for employability or not (key finding 2)
- whether they taught in a pre-Reform context or not (key finding 3)

In this study, participants who studied undergraduate ITE all entered teaching not mainly for employability, they also showed interest in teaching. Pre-Reform Teachers who studied undergraduate ITE developed the most sophisticated conceptual understandings of curriculum and curriculum making. Their diagrams substantially align with the Lambert model. The second most sophisticated conceptions come from the post-Reform teachers who studied undergraduate ITE. The decision to offer geography Gaokao at Year 11 (a year ahead of other subjects) had the effect on reducing geography teachers' contact time for geography and increasing their pressure to prepare for their students' academic performance. Those who became teachers in this policy context where Gaokao was emphasised did not get as much time as the pre-Reform cohort to think about geography curriculum outside the pressures of Gaokao preparation. The post-Reformers also had fewer years of teaching experiences than pre-Reformers. However, they still managed to envision curriculum and curriculum making in more complicated ways than the rest of the teachers who were principally driven to teaching due to employability. The teachers who started teaching in the post-Reform contexts, driven by employability and who did not study ITE developed the least sophisticated interpretations of curriculum and curriculum making.

Consequently, I would raise questions for further research on RQ1:

- To what extent were these factors limited because they were drawn from a small sample?
- If undergraduate ITE does have such a long-lasting effect on teachers, what makes the difference? What lessons can other teacher education programmes learn from it?

- To what extent would knowing other teachers' curriculum making conceptions influence teachers' existing conceptions?
- Are there any possible ways to support teachers predominantly motivated by employability to also develop sophisticated understandings of curriculum?
- The Gaokao emphasis on geography is removed and post-Reform teachers have to teach in a changed context. To what extent will their conceptions change over years?

9.2.2 RQ2 addressed using key findings

RQ2: To what extent do Shanghai geography teachers' curriculum making conceptions align with the Lambert model?

RQ2 is addressed as below:

- "Lambert-aligned" teachers all studied undergraduate ITE (key finding 1)
- "Lambert Divergent" teachers were mainly driven by employability (key finding 2)
- The post-Reform cohort are in less alignment than pre-Reformers as the pressure of Gaokao preparations has limited the time for them to develop sophisticated curriculum making models (key finding 3 and 4)
- Pre-Reform teachers who have achieved epistemic flexibility create models that are the most similar to the Lambert model (key finding 5)

In Chapter 7, we have seen the categorisation of "Lambert-aligned" and "Lambert Divergent" teachers. Chapter 8 further discussed teachers in this category and found that the most similar models to the Lambert model come from pre-Reform teachers who studied sciences as school students and moved on to accept that geography could operate different kinds of truth claims. They all value triadic interactions between students, teachers and subject geography. These Shanghai teachers noting students' contribution to subject geography can also be seen as resonating with what Roberts (2014) and Biddulph (2011, 2017) value as young people's geographies and voices to the curriculum.

However, the employability-driven teachers' curriculum making models are dissimilar to the Lambert model. These teachers consider themselves delivering the subject to students in a linear way, rather than as a co-constructive process as the Lambert model implies. Interestingly, Gaokao reform is an obstructive factor which influenced the teachers models to

not align with the Lambert model. Post-Reform teachers started working in a social context where geography Gaokao is highlighted, hence their models tend to be more linear to accommodating subject geography as a Gaokao subject.

I shall consider these questions in my onward research journey to further investigate RQ2:

- If participant teachers are given these diagrams and are asked to categorise them, how would they categorise, interpret and comment on other peoples' diagrams (including the Lambert model)?
- If teacher educators and student teachers are given the same task to draw out their curriculum making conceptions, how would they draw and what would it be like?
- To what extent would the conceptualisations of curriculum making by geography teachers/ teacher educators from different countries align with the models of participants in this study and/or the Lambert model?
- To what extent would knowing the Lambert model be a stimulus or restriction for people to imagine their curriculum making conceptions?
- If I asked teachers to add more elements in their curriculum making diagrams, what elements would they add? How would the interactions between new elements and existing elements tell teachers' understanding of curriculum making?

9.2.3 RQ3 addressed using key findings

RQ3: In what ways does Shanghai geography teachers' agency influence their curriculum making?

I have answered RQ3 in identifying that four factors facilitate/limit the achievement of agency that will in turn benefit/ restrict curriculum making:

- Undergraduate ITE experience has a long-lasting positive impact on facilitating teachers to achieve agency for curriculum making (key finding 1)
- Employability as a predominant driver of motivation for teaching limits teachers in achieving agency for curriculum making (key finding 2)
- The spotlight of geography Gaokao limits post-Reform teachers more than pre-Reform teachers in achieving their agency for curriculum making (key finding 3)
- The higher epistemic flexibility teachers have achieved, the more agentic they have achieved in curriculum making. (key finding 5)

Overall, factors affecting teachers' achievement of agency for curriculum making come from the iterational, projective and practical-evaluative dimensions. In this study, I looked back at teachers' educational experiences and noticed the role of their epistemic flexibility and their stated purpose for teaching. I also noticed how the time period when they entered teaching created different contexts for teachers to achieve agency for curriculum making. In both cohorts, teachers who studied undergraduate ITE are more prepared to, and aware of extending professional networks to help make the curriculum than those who did not study undergraduate ITE. Despite teachers using different discourse other than curriculum making, they are aware that they can make changes to the curriculum for educational purposes more than just taking the qualification (Gaokao in this case). The pre-Reformers who studied undergraduate ITE are even more cognisant of the educational meanings of geography as they started teaching geography as a marginalised choice in Gaokao.

My attempts to sort out teacher agency's influence on curriculum making makes me wonder about the complexity of their relationship and I go further into this on RQ3:

- To what extent do teachers' curriculum making conceptions and practices relate to each other? Do they influence teachers' development and achievement of agency?
- What can be done to facilitate teachers to achieve agency for curriculum making?
- What shall be removed because it limits teachers' potential in curriculum making?

9.3 Summary

The Gaokao created cultural, structural and material factors which prioritised teaching to the test and closed down space for more creative curriculum making. The post-Reform teachers who started working in a context which emphasised Gaokao faced more challenges to achieving agency in their curriculum making practice. Overall, the key findings and their responses to the study call for facilitating factors for supporting teachers to achieve agency in their current situations. It is not just because the practical-evaluative dimension is where teacher agency for curriculum making may enact, but also because the current situation is where interventions can take place to improve teachers' epistemic flexibility.

10 Conclusion: Imagining different futures

This section outlines this study's contributions from three aspects: practical contributions, methodological innovation and reflexive contribution. After each contribution, I reflect its limitations and suggest next steps. Figure 10.1 visualises my thoughts by taking inspirations from the three dimensions of agency: iteration (past), practical evaluation (present) and projectivity (future). My achievement of agency led me to develop reflexivity over this study, which then led to a reflexive contribution of this study. Practical contributions and methodological innovations grow on the basis of this reflexive contribution. The contributions also uncover limitations and next steps, relating to the iteration and projectivity.

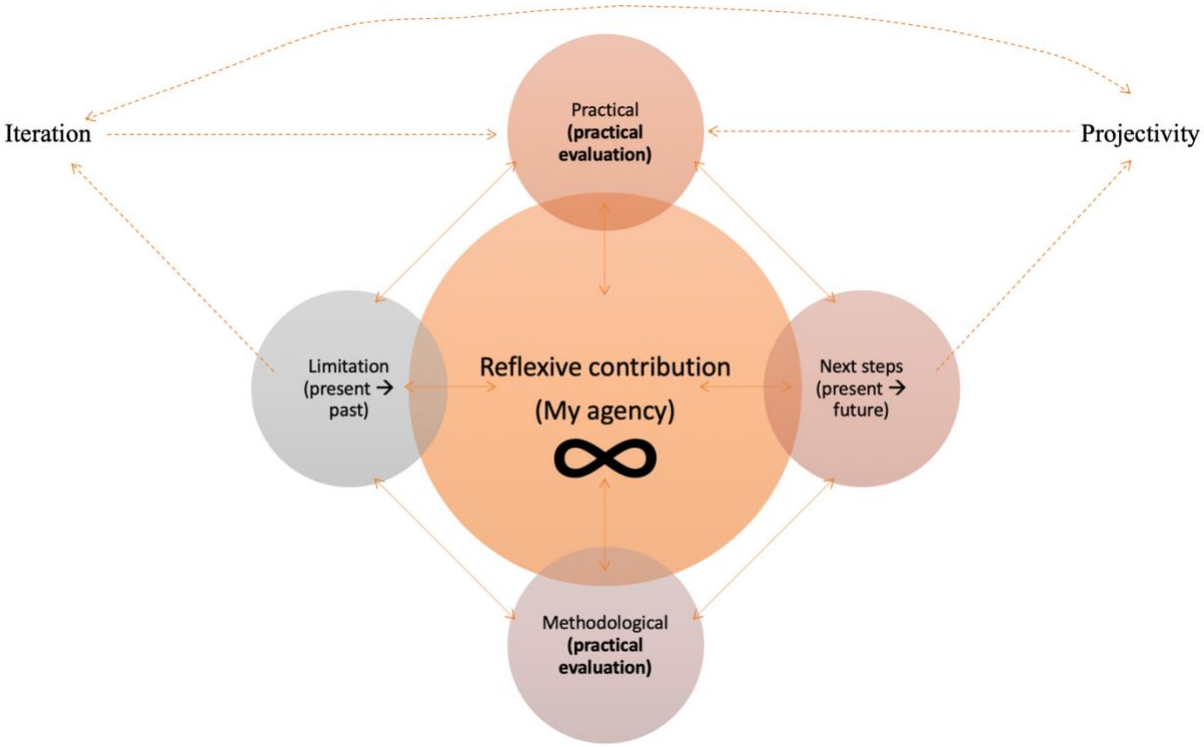


Figure 10.1 The inter-connectedness of concluding remarks

Being reflexive means that I examine and question my beliefs, values, judgements and practices during the research process and how these influenced my study. I consider reflexivity as my exercise to consider myself in relation to my social contexts (Archer, 2007). In connection with the research questions, I believe the original contributions of this thesis lies in: practical, methodological and reflexive.

10.1 Practical Contributions and reflections

10.1.1 Practical contributions

The key practical contributions of my research are as below:

- The need to pay attention to the unintended consequences and interactions of policy making and changes in education

I put forward how changing policies with good intentions could lead to unexpected results. The policy makers should be realistic about the performativity in the education system. The top-down reform comes with the law of unintended consequences (Fink, 2003). The teacher qualification reform intended to establish a national standard to certify teachers (e.g. NTCE) in response to traditional routes being insufficient (through university ITE or sit provincial certification examination). However, in this study, we saw through the NTCE-route teachers did not seem to be as prepared as teachers qualified through university ITE. The 2014 Gaokao reform brought forward the geography test by a year with an intention to disperse the pressure of taking all tests at the same time. However, its implementation led to a considerable increase of students opting for geography in order to bank the result, and caused a high demand for employing geography teachers. The convergence of the two changing policies produced consequences unpredicted by the policies' stated goals.

- The need to alert the divide between academic geography and school geography in China

I point out the long existing policy inconsistency between Chinese schools and universities. The binary division of humanities (school geography as a Humanities Gaokao subject) and sciences (known as Geographical Sciences in Chinese universities) does not fit geography. As mentioned in Chapter 2, some prestigious Schools of Geographical Sciences used to not accept applicants who studied Humanities for their Gaokao. It was good that the State Council (2014) abolished the divide between Humanities and Sciences at secondary school with an intention to encourage students to choose elective subjects based on their interests. As a result, students can choose subjects from both Humanities and Sciences category.

However, policy makers need to be aware that the school divide between Humanities and Sciences exists in response to the university majors that students would be eligible to apply to. Gaokao stands for the university entrance qualification. Students taking science subjects in Gaokao have significantly more majors to choose from than those who study Humanities,

plus more promising employable opportunities after graduation (more in Appendix 3). For example, three Shanghai-born geography teachers all studied physics (they sat "3+1" Gaokao mode) knowing that physics would give them the widest choice in applying university majors. That is, if Chinese university departments still insist on enrolling applicants based on their elective Gaokao subjects, secondary students would have to weigh their elective subject choices according to their university applications. Inconsistency is evident between school and university levels: between school geography and university geography.

Suggestion 1: Government needs to be more cautious in changing policies.

First, policy makers need to revisit the impact of National Teacher Certification Examination (NTCE) as the only route to teacher qualifications. The stated goals of NTCE was to set a national standard for teacher qualifications from entry (MoE, 2010), intending to reform problems that emerged from the previous two routes to qualify:

- each teacher education provider (teacher colleges and universities) grants permanent teacher certificates for students who studied ITE with them at their graduation
- each province sets its own standards and organises teacher certificate examinations

The intended consequence was that NTCE could assess the quality of ITE and improve the quality of teacher education as studying ITE no longer guaranteed teacher certificates. Sitting NTCE to certify applied to each province, meaning a unified standard applying to all provinces in China. However, in practice, the policy created a teacher entry system allowing examinees to have minimal engagement with initial teacher education. The NTCE system was set up in a way that one could pass if they knew how to perform well. This study showed that teachers who entered teaching without formal teacher education were clearly at a disadvantaged position to achieve their agency for curriculum making. They should be offered some form of additional teacher education in their continual development programme.

Second, policy makers should revisit the unintended consequences brought by Shanghai moving geography Gaokao a year ahead of other Gaokao subjects. The intention was to reduce the pressure on students caused by taking all Gaokao exams at the same time period

(Shanghai Municipal People's Government, 2014) [34]. However, when there was a dramatic change of geography Gaokao taking a year ahead than other subjects, it was naïve for policy makers to not expect a sudden lurch towards geography. The significant rise of geography examinee numbers caused a consequent high demand in geography teachers. There are two directions to go: the government can either try to make the system less performative, or to be cognisant of knee jerk reactions coming from a performative system.

Suggestion 2: Consistency needs to be prioritised across different levels of policy making.

To deal with the seemingly self-contradictory images of school geography as Humanities and university geography as Sciences, policy makers who work with geography across different levels of education can consider updating the image of geography. For example, the new image of Geography could be that it is a subject/discipline which bridges Humanities and Sciences, hence being both. It can be a further step in responding to the State Council (2014) policy on removing the binary divide of Humanities/ Sciences. In order to prioritise the consistency, it would be helpful to bring people with geography backgrounds but worked in different fields to connect with each other. As school geography and university geography have been in different categories for a long time, it would be helpful for the policy making process to take diverse voices into account. This also leads to Suggestion 3.

Suggestion 3: A more thoughtful policy making process is in need, in order to engage with young people and school teachers in order to take their perspectives into account.

Instead of focusing on established professionals who have studied geography, policies are made and changed for young people to have a better chance. To achieve this, voices from young people and school teacher should be listened to. The teacher qualification reform was intended to establish a national standardised route for everyone, instead of giving privilege to ITE students permanent teaching qualifications. The national Gaokao reform removed the Humanities/ Sciences Gaokao for young people to opt for subjects not restricted by humanities only or Sciences only. The Shanghai Gaokao reform intended to reduce students' Gaokao pressure by moving the geography test ahead. However, these systematic top-down changes all created unintended consequences. To reduce the risk of unintended consequences

[34] From September 2021, geography Gaokao was moved back to the same time as other subjects (Shanghai Municipal Education Commission, 2021).

diminishing the policy's intention, having dialogues with youth and teachers who will be involved in the reform would be an approach to thoroughly imagine possible consequences.

Employability was a recurring theme in this study. In their interviews, participants took pride in securing jobs before their graduation, and felt humiliated when they were turned down at job interviews. Among post-Reform teachers, the teacher who always wanted to be a geography teacher and studied undergraduate ITE had been turned down by schools many times before finally finding a job; the two geography postgraduates without any ITE faced no difficulty in securing a teaching job. Their experiences suggested that more performative teachers seemed to be more employable. The employers in the schooling system favoured employees with two degrees over those with one, and favoured geography degrees more than ITE. Suggestion 3 is an essential part to Suggestion 1 and 2 for improving any revisiting of the policy making or any update to it. Overall, when a policy needs to change, I suggest that policy makers should consider relevant policies which may interact with the change, as well as possible consequences (both intended and unintended). One way to avoid unintended consequences would be to make the policy making procedures less top-down by taking other perspectives into account, in particular young people and teachers who are influenced by the reforms the most.

10.1.2 Limitations

Presenting the practical contributions and possible implications makes the limitations of this study visible. This study focused on teachers. Although I recommend including diverse voices for policy making, I did not design my research to communicate with people other than teachers. I did not talk to students, especially the graduated students who studied geography in 3+3 Gaokao. The students taught by the teachers who participated in this study could have provided a second opinion on their teachers' curriculum conceptions and practice. Second, I also did not design to have conversations with people who influenced teachers' professional networks. There were practical limitations which would have needed to be addressed had I designed my study to start from teachers but also to include being introduced to people who influenced teachers. I did not choose to extend as the current study was able to answer my research questions, and I received intriguing findings from different teachers. However, the limitations give me ideas to imagine next steps.

10.1.3 Next steps

One possible direction is to extend studies to bring together the diverse voices of stakeholders who were influenced by the Gaokao Reform. I could go back to teachers for further research collaboration, ask if they could introduce someone to me, or come up with someone's name if I would like to know more about geography curriculum making in Shanghai. The other direction is to do collaborative research with teachers and teacher educators. Participants from both cohorts mentioned the hierarchical professional development schemes, but post-Reform cohort teachers were less familiar with how to navigate the system. This research has the potential to present pre-Reform teachers' stories as case study materials for post-Reform teachers to know what they could do. In addition, a few teachers also expressed that they appreciated the approach of this research (qualitative interviews) which gave them opportunities to speak for themselves and felt that they were heard. The current professional schemes seem to prioritise teachers who perform well in the system and can navigate it, ignoring those who were not active in the system and lacked professional networks. Chapter 6 and Chapter 8 have already outlined the significance of extending diverse professional networks for teachers to achieve agency for curriculum making. I could possibly develop horizontal professional development resources for teachers to establish connections with each other, me as well as my networks.

Another possible direction is to invite teacher educators on board for collaboration. These people include but not limited to university-based scholars, Master Teachers with Master Teacher Hub, teaching-research officers at local educational authorities. It would be interesting to listen to their opinions and reflections on the Gaokao and teacher qualification reforms. For example, I can ask them to what extent they spend time talking with teachers about agency, curriculum making, and establishing professional networks during their career.

10.2 Methodological contributions and reflections

10.2.1 Methodological contributions

The key methodological contribution of my research was to interrogate the Lambert model by co-constructing teachers' curriculum making conceptions. Future research could also use it in these ways. I consider the innovation lies in an option to:

- Create a dialogic space for teachers to talk about their curriculum making ideas

What makes the methodology innovative is not the diagrams, but the process to make the diagrams. The co-constructing drawing process introduced a conceptual architecture to participants. It was also an illuminating exercise for me. I did not plan to request teachers to make a curriculum making diagram. Before making the diagram together, I had two semi-structured interviews with teachers, they already talked about themselves, students, school geography, academic geography and education. The first diagram co-construction was coincidental. One participant asked what I would do after the interview. I said that I needed to find connections in what they thought about themselves, students and geography. I paused and asked if they would like to try a challenge with me. That was how the co-construction began. It was the dynamism of the dialogues between teachers and me which constructed the diagrams. The significance of this method is that it opens the door for teachers to have this type of professional conversation. The fact that teachers produce very different diagrams and gave different instructions also showed that every teacher (at least in this study) had curriculum making conceptions and were able to express them in detail. In the analysis, I did not use Lambert model to analyse teachers' practice, but instead I brought the Lambert model and teachers' models as the middle ground for conceptual clarification.

Suggestion 4: Horizontal collaboration between teachers and researchers should be strengthened in studying teacher education and development programmes, through inviting teachers to fully express their thoughts and ideas.

This thesis used teachers' diagrams as a tool to research curriculum making, and showed different kinds of practices. This suggestion stresses the significance of involving teachers' voices in curriculum making, considering teachers' experiences and stories as starting points. In this study, teachers with undergraduate ITE experiences developed more complicated diagrams of curriculum making than teachers who studied postgraduate ITE or did not study ITE. The former also has achieved more agency for curriculum making than the latter. Horizontal collaborations are also crucial to reduce the unintended consequences caused by top-down approaches. In this research, most teachers work in schools where visible and hidden hierarchies discipline teachers to be performative, which could limit teachers' understanding of curriculum from going beyond exam-orientation. Enhancing horizontal collaborations gives a voice to teachers who are less heard than teacher educators. Collaborative dialogues have the potential to support teachers to achieve agency for curriculum making.

10.2.2 Limitations

In this study, I did not present any existing curriculum making models and frameworks to teachers. I did not even introduce the term curriculum making. Because its translation in Chinese is commonly associated with curriculum planners, rather than classroom teachers. I avoided the potential risk of introducing a jargon to teachers, and having to explain what I mean by the term, which might result in leading teachers to give answers that they thought I expected to hear. On the one hand, teachers' ideas were their ideas, not necessarily influenced by existing work on curriculum making. On the other hand, if I introduced teachers to curriculum making models, and discussed their diagrams and these models with teachers, teachers would have a more informed understanding of what curriculum making means.

In this research, I also became more aware that when two people talked about the same term, what they meant by the term could be very different. For example, when I say school geography as a subject, I mean the subject being taught at school consisting of the curriculum and textbooks based on the National Geography Curriculum Standards, local geographical courses developed by teachers themselves or their district's educational bureau. However, most teachers understand the subject as the Gaokao subject, and frequently refer to examinations. The communications with teachers on terms makes me wonder:

- To what extent should I have first clarified what I mean by a certain term instead of assuming others understand the same way as I do?
- If every concept needs to be clarified and explained, whose conceptualisation shall be considered? Why are they worthy of consideration?
- In what ways can my approach facilitate communications between school-based practitioners and university-based researchers?

10.2.3 Next steps

Developing teacher diagrams in this research provided an alternative route to interrogate the Lambert model. The participant teachers and I co-constructed diagrams to elaborate how the teachers see themselves and their relationship with other elements. The diverse diagrams demonstrate that teachers differ in imagining their role in curriculum making. One further step to take would be to invite teachers to revisit the diagrams, to have further conversations on the diagrams, and to introduce them to the term curriculum making. The teacher diagrams

could be materials used for discussions in teacher education and professional development programmes. Another step would be to propose a similar approach to teacher educators. Some teacher educators may be familiar with curriculum making, but it would be an opportunity for them to re-examine whether their knowledge of curriculum making and their practice of curriculum making align.

10.3 Reflexive contributions and reflections

10.3.1 Reflexive contributions

The fundamental reflexive contributions of this study are its transformative impact on me:

- Start from using the Lambert model and grow beyond it

I started with a belief in the Lambert model and its educational potential to free teachers from viewing themselves as curriculum implementers. I appreciated the clarity and assurance it provided to teachers. I believed that every teacher was a curriculum maker as their teaching interacts with school geography and students. They had to make choices on what to teach, how to teach and why to teach the content in particular ways. I translated the Lambert model into Chinese with powerful knowledge and geo-capabilities in my Master's dissertation. The review panel considered that this foreign concept did not apply in the Chinese context as curriculum making was for curriculum planners. Their stance was that, teachers implement the given curriculum by delivering the curriculum to students. In this study, I came to notice that not all teachers in my study consider themselves as equal contributors to school geography. They also held a view of curriculum delivery. However, there were also teachers who visualised curriculum making diagrams as them interacting with school geography.

First, I have evidence from Chinese teachers to prove that it was not entirely foreign to consider that teachers, students and school geography interact with each other. Second, the Lambert model is not the only way that teachers imagine themselves in curriculum making. The insight for me is to appreciate the diverse ways that teachers see their role in curriculum making, instead of finding the model that fits for all.

I came to notice that teachers as curriculum implementors and curriculum makers were two metaphors with different outlooks. The former implied hierarchies and assumed the curriculum as given, teachers as curriculum transmitters delivering the given curriculum to students. The curriculum was teacher-proof, which restricts teachers in achieving agency for

curriculum making. The latter intended to break hierarchies and suggested the curriculum as a complex process and social practice, recognising teachers as essential contributors to making the curriculum, particularly in the classroom but also across different sites of curriculum. The latter did not take the official curriculum for granted and finished, which facilitated teachers to achieve agency for curriculum making. The contribution of this study was to recognise that: While the implementor metaphor restricts teachers' achievement of agency for curriculum making, the maker metaphor releases teachers' potential to achieve agency for curriculum making.

- Dissatisfaction as a motivation to find an alternative

Throughout my study, I often felt overwhelmed by noticing the gaps. First, there was a gap between academic geography and school geography. Second, the gap between English academic geography and school geography was different from Chinese academic geography and school geography. Thirdly, even within the same city, and the same vocation, teachers in Shanghai schools could understand geography differently. I increasingly grew dissatisfied with explaining the differences by attributing them to the contexts. Because this attribution implies an assumption that what I say is already predictable by others as they can see where I come from before I speak. Hence, I would like to question what is behind the so-called Chinese contexts. I also would like to challenge myself to explore why I am not seen as Chinese enough because of studying in the West, but also not western enough as I am not born and bred up in the West.

Living as an international PhD researcher in Stirling gives me the distance from which to gain a different view of the Chinese context where I grew up. I used to think this is a marginalised outsider's perspective. I am an outsider in Stirling as I am not from here, and an outsider to my home country as I no longer live there. My study has taught me to view myself as a creator who can bridge two groups of people and literature to generate dialogues in my research. These Shanghai teachers' stories were never heard here as they were not written in English. Most of the English literature also had never been used to study Shanghai teachers. I do not expect Shanghai teachers will act as disciples of the literature, but it may open up possibilities for them to see alternative ways to consider themselves.

10.3.2 Limitations

Although I value the time and experiences of teaching geography in the classroom, I never taught students to sit geography Gaokao. I tried to be empathetic with teachers and their focus on Gaokao. However, as a researcher, I am aware that qualification is not the only reason for teaching school geography. I intended to design this study to investigate teachers' conceptions and practice, rather than judging and evaluating teachers' choices. However, unintended consequences emerged in my study too. When I analysed their diagrams with the Lambert model, and their experiences with the teacher agency model, my interpretations have the potential to be indicators to measure teachers.

10.3.3 Next steps

My journey from believing in the Lambert model to appreciating it as one of many curriculum making models takes me forward to ask further questions:

- How can I share these different curriculum making models with my participant teachers in ways that they do not feel they have to compete for the best model?
- How can I introduce this method to teacher education and professional development courses as a way that participants can draw their curriculum making diagrams, and then also have discussions with other existing models of curriculum making?
- How can I facilitate people from different sectors of curriculum making to also draw out their conceptions and communicate without a hierarchical mindset?
- How can I curate a series of 'curriculum making' drawings into educational resources and public exhibitions to celebrate the diverse roles teachers take in the curriculum?

The intended next steps are my proposal, as precautions, to prepare teachers for the next unexpected changes. My aim is to improve teachers' epistemic flexibility to achieve their agency regardless of the changing times. To conclude, changes are irreversible and unavoidable in teachers' careers, but participants teachers' different ways of responding to changes indicate that their agency can make a difference. The study shows that some teachers could be agentic and aware of their role in curriculum making irrespective of changes, some could be agentic but not aware what they are doing is part of curriculum making, while others feel more restricted to achieve agency in a structure discouraging them to make the curriculum, but every one of them has the potential to achieve and maybe also act differently.

10.4 Concluding summary

Despite the potential for examinations to orient and even lead teachers to take instrumental views on their work, teachers as human beings do not react the same way towards these changes. The thesis concludes that every geography teacher that has agency to find their ways to deal with changes, and their agency can have a role in their practice of curriculum making. However, if teachers internalise a narrow vision of understanding their work as curriculum delivery, this tunnel vision can obstruct teachers from achieving agency for curriculum making. It was not that teachers could not be agentic for curriculum making, it was that they were disciplined to think that they shall implement what is given.

It is important to have policy support to reduce the focus on accountability and performativity, but the habitus teachers built in a highly performative system would not be removed overnight. Uprooting teachers' habits will take time, yet as long as they are identified as formed habits, there is hope to form new habits. Like a plant that needs watering, sunshine and nutrition, teacher's achievement of agency emerges from the teacher and also needs the support from the environment they live in. The thesis ends with hope in agency, which could be achieved more when the cultural, structural and material factors all facilitate its achievement. And most importantly, it comes from within the teacher.

I end the conclusion with a quote from a participant teacher. This quote encouraged me to continue what I do:

> *When you are teaching the students, there will be moments that I feel: oh, right, this is actually a better way. I think education is not what influence you bring to students, but also what students and education have influenced you. You (as a teacher) are growing and learning too. (Cai)*

Epilogue

It took me eight years (2015-2023) to get this piece of study from an idea to a PhD thesis. The idea emerged when I was working as a research assistant to David Lambert, and it grew arms and legs in Shanghai, London and Stirling, finally became a thesis you read.

I want to tell a short story of my mother and my aunt. My mother was born as a farmer's daughter. She did well in her primary school, then suffered from poor vision. She could not read what her teachers wrote on the blackboard even when sitting in the first row, but she thought her family could not afford to buy glasses for her nearsightedness. She left school, and worked as a manual labourer to support her family, in particular her younger sister who was still studying in school. My aunt was always top in the class, but she chose to go to a vocational school rather than an academic one focusing on Gaokao, so that she could begin earning to support her family as soon as possible. When I finished my master's degree in Shanghai and insisted on studying my PhD overseas, my aunt convinced my mother to financially support me because they never got the opportunity to study for themselves due to poverty.

Without their love and support, I would not even be able to start. In this study, I focused on **agency**, a term they had not even come across until I introduced this term to them. However, their choice of supporting me to do what I wanted to do rather than requiring me to follow their steps was evidence of their achievement of agency in *manoeuvre among repertoires*.

In 2020, I was devastated to receive a judgement of 'academic insufficiency' from UCL IOE. My aunt and my mother both suggested me to get a second opinion, which led me to Stirling. They cheered for every little step when I moved forward, and encouraged me to continue if I wanted to still go ahead in spite of challenges. They influenced me to have hope in what I can achieve. I applied it further – this research with teachers should also be the kind of study that believes **every person can achieve agency**. Instead of judging teachers as agentic or not, I shall re-orient my perspective to look at what their environment and their lived histories impact them, why teachers were more influenced by some particular experiences than others.

I hope my thesis offers readers a pair of glasses to notice agency within themselves and others, and encourages readers to be the influence facilitating one's achievement of agency.

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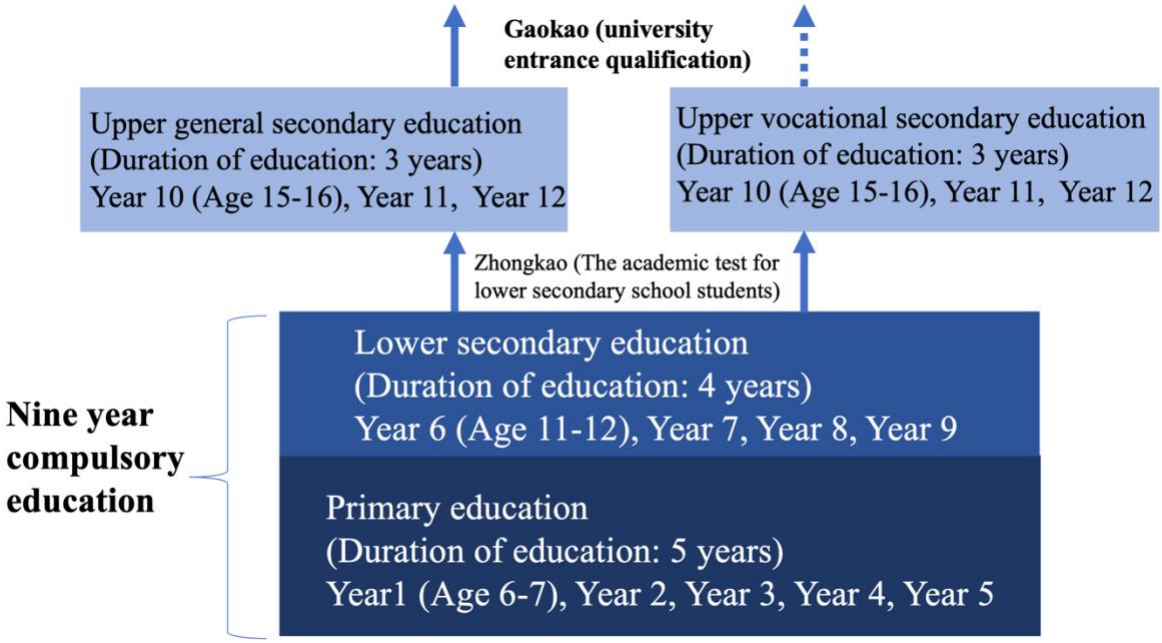
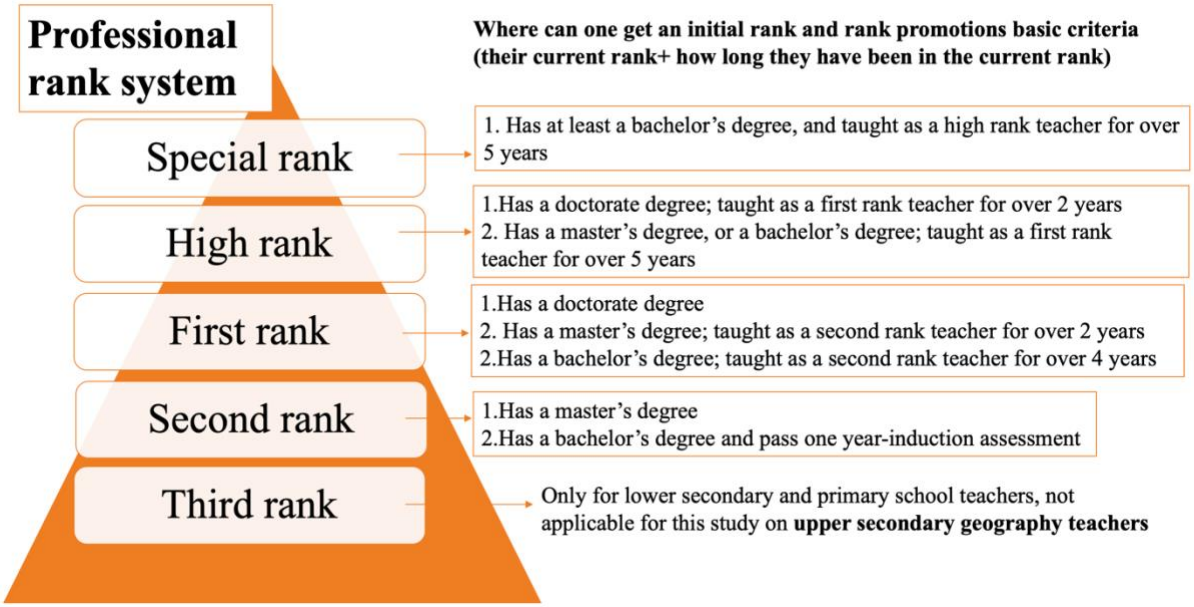
Appendices:

Appendix 1: The schooling education system in China



Appendix 2: Teachers' professional rank system in China



Appendix 3: Why science subjects were favoured in China and reflected in Gaokao?

I briefly review the history and recent policies to show that science has always been the centre of development in China, meaning that sciences is always preferred in the modern schooling and higher education system in order to meet the political and societal needs.

In China, students are familiar with a saying "Study math, physics and chemistry well, walk around the world without fear" as it is taught as a common wisdom (Zhou and Yao, 2021). Pupils achieving high scores in mathematics and sciences is not only considered as smarter than those who are good at art and humanities, but also means they will have promising job prospects. It is heavily associated with the national investment in prioritising science and technology achievement (Cao *et al.*, 2019). The Chinese government consistently invest in STEM research in universities (Zhou and Yao, 2021). It is rooted in a scientism tendency in the first half of 20th century in China (Kwok, 1965). The intellectuals of the May Fourth Movement understood science in old-fashioned definitions, and admired science as a replacement of Confucianism (Kwok, 1965). According to Fan (2005), in the grand 1923 debate on science versus metaphysics, nothing else was admired more than science, hence scientism undoubtedly won the debate. Fan (2005) also noticed that Marxism started to have an influence on scientism from 1927, and gradually developed into a mixture of Maoism and Scientism. From the Opening-up and Reform era, supports of scientism and supports of humanism started to have debates again, yet the former tended to consider methods in natural sciences should be applied in all research fields, including philosophy, humanities and social sciences (Fan, 2005). The government's policy can be seen as a 'win' for scientists and their "scientism", such as the Scientific Outlook on Development proposed by Hu Jintao (the former Chinese leader, in power from 2002 to 2012). A more recent governmental emphasis on science was Xi jinping's (2022) speech emphasising self-reliance in science and technology in 2022 (see more in Mallapaty, 2022). In a nutshell, the current societal favours science with political governance concerns and scientism emerged in modernising China.

Appendix 4: Ethical approval

UNIVERSITY of STIRLING

University of Stirling
Cottrell 3B1
Stirling
FK9 4LA

11/08/2021

Dear Xin

Ethics Application Form : Curriculum Making in China: Stories of geography teachers in Shanghai since 2015 2422

Thank you for your submission of the above ethics application.

The ethical approaches of this project have been approved and you can now proceed with your project.

Please note that should any of your proposal change, a further amendment submission will be necessary.

If you have any further queries, please do not hesitate to contact the Panel by email to ethics@stir.ac.uk

Yours sincerely,

General University Ethics Panel

Appendix 5: Recruitment materials

The draft message to my network (my university tutors, course mates, alumni) through WeChat (a social media widely used in China) for catch up:

> Hi there, I need your help in recruiting research participants for my PhD project. Do you mind receiving an email from me which will say a bit more about this?

If they say yes, I will send them the following email:

Title: Xin Miao's participant recruitment

Dear (Name),
Thanks for willing to help me. I am interested to find out more about Shanghai geography teachers' life and work since the two educational reforms: Gaokao and teacher qualification routes.

Now I have obtained the ethical approval from my university. I would like to ask you to think about two to three potential volunteer participants fit the following criteria:

1. You know them but they are strangers to me (not having any previous personal connection is fundamental to my research to reduce any potential bias)
2. The teachers you know are not famous in the geography education community (my study intends to protect the participants' confidentiality and reduce the traceability, if they are already famous, for example, well-published, that would be too easy to be recognised in the future publications)
3. The teachers all work in different schools, in other words, they are not colleagues;
4. The teachers are full-time employed at Shanghai state-owned upper secondary schools;
5. The teachers have at least three academic years of experiences in teaching geography in Shanghai, have taught both Year10 and Year11 at least one academic year;
6. The teachers you refer me to all have different education backgrounds before starting their school teacher career (to my knowledge, there are three existing routes: had their teacher certificate through initial teacher education at their undergraduate years; had

their initial teacher education and passed the National Teacher Certificate Examination to get qualified; passed the NTCE without ITE)

If you can think about two to three teachers fit these criteria, and they are potentially interested in participation, all I ask for you to do is to forward them this email **separately** with the attachment (participant information sheet, consent form) as soon as possible.

You do not need to convince them to participate, just spreading the word to some teachers you think are suitable for my research and might have some interest is enough. If they are actually interested in participation after reading the email and the attached information sheet, they can contact me through xin.miao@stir.ac.uk

I appreciate your time and thanks for your help.
Best wishes,
Xin

Appendix 6: The information sheet and consent form

Life and work: Stories of geography teachers in Shanghai since 2015

Participant Information Sheet

1.Background and aims of project

My name is Xin Miao, and I am a doctoral student at University of Stirling. Within my research, I am looking at geography teachers' life and work within a context of geography becoming a popular choice in Shanghai upper secondary schools.

The study has two main aims: to better understand teachers' life and work in relation to the geography curriculum and relevant practice; and how the emergent Chinese teachers' thoughts and actions are similar and different from the existing literature of teachers' life and work in relation to teachers' role in the curriculum. My project is supervised by Professor Mark Priestley and Dr Joe Smith, partly funded by the China Scholarship Council.

2.Why have I been invited to take part?

You have been invited because
-You have worked in a state-owned Shanghai upper secondary school as a full-time employed geography teacher for over three years since 2015
-You have experiences of teaching Year 10 and Year 11 students before September 2021
-The person who forwards you this thought you may have some interest in participating
-You and I have no previous contact, in other words, we are strangers to each other

3.Do I have to take part?

No. You do not have to take part.

Even if you now decide to take part, you can withdraw your participation at any time without needing to explain and without penalty by advising me of this decision.

If you withdraw, I will not collect any more data from you. However, any data collected up until the point that you withdraw will be kept and used in the data analysis.

To confirm your participation, you will need to complete an electronic consent form and email xin.miao@stir.ac.uk with the signed form attached. You are also asked to provide a gender-neutral pseudonym (a name you prefer to use and have not used it elsewhere, do not contain any of your personal identifiers).

4.What will happen if I take part?

What I expect from you is:

The study will take online. You will need to complete two one-to-one interviews (approximately two hours each), provide the lesson materials you used and keep a reflective diary for at least ten entries (five to ten minutes per entry).

For all the materials you send to me as data I collect from you, ensure none of them contain any content in which no other people, in particular children (under 18) can be seen or heard.

In time sequence, these are the research events in your participation:
*1.*If you do not have a Microsoft Teams account yet, download the Microsoft Team app to your device, use a passcode protected email to register a Teams Account;
*2.*Arrange 1.5-2 hours in September for the first online interview focusing on your personal and professional life stories and future aspirations, willing to have a recorded video call;
*3.*After the first interview, based on our conversation, organise and send some of your used lesson materials at Teams, which approximately would also take 1 hour;

*4.*Following our agreed schedule and format in the interview, write/draw/record a reflective diary log for at least ten entries (5-10min per entry) in September and October 2021, uploaded to Teams at the chat between us two;
*5.*Arrange another 1.5-2 hours in October or November for the second online interview focusing on what you sent to me at Teams (the lesson materials, reflective diaries)
6.The following ones are optional:
6.1 read the interview transcripts in Chinese, if in need of amendment, we will have a chat at Teams or a Teams call about it (will not be recorded);
6.2 if you want to get feedback from the results of this study, I will sen you the preliminary analysis of your case as a one-page Chinese summary around February 2022 at Teams, if in need of amendment, we can chat at Teams or have a Teams call about it (will not be recorded); I will also translate the final analysis of all cases into a Chinese summary around February 2023, at that time, there would be no amendment chance (as it will happen after my thesis submission), but if you want to chat, we can again, have a chat at Teams or have an unrecorded call at Teams.

5. Are there any potential risks in taking part?

There following risks are involved in taking part:

When in participation, you need to take your after-school or leisure time for this academic project, which may squeeze your spare time for recreation, and you may feel stressed; some of the questions being asked in the interviews may also recall some of your memories and you may feel more emotions than no participation;

When in publication, every effort will be made to keep you anonymous, but there is always a small risk that someone may be able to identify you.

To help prevent these risks, I will:

During participation, your wellbeing is the priority. When you feel stressed or want to pause or delay the interview schedule or submission of relevant lesson materials or diary, your wellbeing comes first. I will always respect your decision.

To reduce the risk of you being recognised, your personal data (name and contact details, in this case, email) will be protected in my password-protected Outlook and Teams account. They will not be exposed to any third party, apart from some of the following exceptions:

Confidentiality will be respected subject to legal constraints and professional guidelines. If the research uncovers evidence of wrongdoing and potential harm or even crime, I may be obliged to contact relevant statutory bodies/agencies. Within UK law, obligations to disclose exist in relation to child protection offences, the physical abuse of vulnerable adults, money laundering and crimes covered by the prevention of terrorism legislation.

If the conversations between us make me deeply worried that the participant or others might be in danger, I might have to inform relevant agencies.

In my thesis and future publications, only pseudonyms will be used, none of your school or district will be mentioned. By doing so, the possibility of tracing to you is also reduced.

6. Are there any benefits in taking part?

There will be no payment or direct benefit to you for taking part in this research. The participation is voluntary. This research may potentially contribute to your continuing professional development, which may indirectly benefit your career.

7. What will happen to the data I give?

After having permission from your voluntary participation, all our communication will be stored at Microsoft Teams. Each participant's data will be stored at a specific Team page created for them. Your consent form would be stored separately from your primary data page. according to the University of Stirling data management policies, research data will be kept securely ten years after finalising the study. In this case, your signed consent form and the data you give (recorded video interviews, used lesson materials, reflective diaries) will be stored at my password-protected Teams account for ten years before securely destroyed.

The personal data (name, contact details) will not be transferred to a country outside the EU, and protected in accordance with the General Data Protection Regulation (GDPR) when not in conflict with the exceptional scenarios listed in the previous section 5.

8. Recorded media

Every time before I record the interviews we are doing, I will ask for your permission. Only after obtaining your oral permission, I will start recording. The reason for this study to do video-recording is that I am doing an online interview with you and I would like to focus on what we are talking instead of taking notes. By having the interview video recorded, I can focus on our interview, instead of keeping notes. I can revisit the interview and transcribe for my data analysis. The reason it is a video recording instead of an audio recording is because I would like to make this virtual experience as real as possible for us to see each other's reaction and feel that we are in the same space. The video will be securely saved in our Teams chat. Both of us have password-protected accounts.

9. Future uses of the data

The data you will provide will be used in my doctoral thesis. Findings may be also published as academic papers and conference presentations. Since my PhD is partly funded by the China Scholarship Council (CSC), I will share anonymised summaries of my findings with CSC, to shed light on current and future reforms in China. The data will be kept in secure storage for access by me and the translated research data will be accessed by my supervisors. Your personal data (name and contact) will only be accessible to me.

Due to the nature of this research, it is very likely that in the future, after my doctoral study, I would like to continue studying the data and may find them helpful in answering other questions. Some other researchers may find the data useful in answering their research questions. I will ask for your explicit consent for your data to be continued for future use in other research projects. If you agree, I will ensure that the data collected is untraceable back

to you before letting others use it. Any other researcher would not get your personal information (name and email) I collected for getting your consent to conduct this research.

10. Will the research be published?

The research will be published as my doctoral thesis (the normal period of confidentiality is two years) and maybe published as journal papers or conference papers. You will not be identifiable in any of these publications. As for accessing a copy of the published results, University of Stirling is committed to making the outputs of research publically accessible and supports this commitment through our online open access repository STORRE. Unless funder/publisher requirements prevent us, this research will be publicly disseminated through our open access repository.

11. Who has reviewed this research project?

The ethical approaches of this project have been approved via the University of Stirling General University Ethics Panel.

12. Your rights

You have the right to request to see a copy of the information I hold about you and to request corrections or deletions of the information that is no longer required.

You have the right to withdraw from this project at any time without giving reasons and without consequences to you. You also have the right to object to me processing relevant personal data. However, please note that once the data are being analysed and/or results published it may not be possible to remove your data from the study.

13. Who do I contact if I have concerns about this study or I wish to complain?

If you would like to discuss the research with me, here is my name and email:

Xin Miao
e-mail: xin.miao@stir.ac.uk

If you have any more concerns about the study or me or further questions about it, you can also contact my first supervisor:
Prof Mark Priestley
e-mail: m.r.priestley@stir.ac.uk

You have the right to lodge a complaint against the University regarding data protection issues with the Information Commissioner's Office (https://ico.org.uk/concerns/).

The University's Data Protection Officer is Joanna Morrow, Deputy Secretary. If you have any questions relating to data protection these can be addressed to data.protection@stir.ac.uk in the first instance.

What now?

You can keep this information sheet. If you agree to participate, please read the consent form and send it to me your e-signature.

Thank you for reading this!

Life and work: Stories of geography teachers in Shanghai since 2015

Ethics approval number: [2422]

Participant Number: [ ]

Participant Consent Form

Please tick boxes ☑	
I confirmed that I have read the participation information sheet explaining the above research project and I have had the opportunity to ask questions about the project.	
I confirm that no data I provide to the researcher will contain any content in which other people, in particular children (under 18) would be seen or heard.	
I understand that my participation is voluntary, and that I am free to withdraw any time of during the study, without giving a reason and without any penalty. I should email the researcher whether I am happy if she uses the data obtained up to that point. I understand that I can only withdraw my data within 1st December 2021, beyond that time point, when the data analysis has started, it may not be possible to remove my data from the study.	
I understand that the response I give will be kept under a pseudonym and my real name will not be mentioned in future publications.	
I give permission for the researcher to use my responses in her future research projects and I give permission for her supervisors, and her future research collaborators to have access to my pseudonymised responses.	
I consent being video recorded in our two online interviews through the video-conference function of Teams.	
I understand how video recordings will be used in research outputs. The images will not be used or disclosed, only the interviews will be transcribed for data analysis. I am aware that I will not be named in any research outputs but I still could be identified by people I know through the stories I tell.	
I give permission to be quoted directly in the research publication under my pseudonym. My real name will not be mentioned or indicated.	

I agree for research data collected in the study to be given to researchers, including those working outside the EU to be used in other research studies. I understand that any data that leave the researcher will be fully anonymised so that I cannot be identified.	
I agree for my personal data to be kept in a secure database so I can be contacted by the researcher about future studies.	
I understand that anonymised findings of the research will be shared with her funder, China Scholarship Council.	
Overall, I agree to take part in this study.	

Name of Participant: Signature: Date:

Name of Researcher: Xin Miao Signature: Date:

Appendix 7: Interview and reflective diary guidelines

Phase I (one-to-one life story interview)

1. Lived experiences about the teacher **(event timeline)**

-previous university experiences (major, ITE, NTCE)

-how did you become a geography teacher?

-what did you do to become a certified geography teacher?

-why did you choose this career? (geography teacher)

[related to the life/professional histories- iterational, teacher agency model]

-the school ethos (the pressure they felt internal and external, their relations with others)

-the geography department ethos (their image of different geography colleagues, relations)

other roles you take in the school

-values and beliefs: what's your strongest opinion? What would you want to discuss more?

[related to the cultural element: ideas, values, beliefs, discourses, language, practical-evaluative, teacher agency model]

-their frequent sources to get information about the geography curriculum they teach

[related to the structural elements: social structures (relationship, roles, power, trust) practical-evaluative, teacher agency model]

-the helpful or lack of resources/influential people in relation to geography education in becoming who you are today

-describe your work environment to me (office, classroom, campus, others, commute)

[related to the material elements: resources, physical environment, practical-evaluative, teacher agency model]

2. The future aspirations **(projections)**

-the changes you want to bring in your classroom, department, school, wider community this academic year (starting from September 2021; September, this term, the whole year)

-five years after: where do you see yourself in five years? What would be different?

-ten years after: where will you be in ten years? What would be your typical day like?

-twenty years after: where most likely would we find you? What would you be doing?
-do you see yourself always in this career? Would you consider other jobs?
[related to the short term and long term in the projective dimension, teacher agency model]

Phase II (teachers' self-report)

Teachers submit teaching materials and write reflective diaries.

What I look for in teachers' lesson materials, and reflective diaries:

1. A week work summary (including other roles)
2. Choose one day to describe the daily work routine (if you write your role as a geography teacher, talk about how many classes you have every week)
3. Personal understandings of their work

d. Conceptual understandings of the geography curriculum

e. Teachers' practice of the curriculum on the spectrum of implementing and making

Reflective diary log guide

I request **at least 10 entries** of your reflective diary. I provide a guide for the first five entry (see below). You can either follow or go creative at the following five or more. For the rest of your entries, there is no need to limit your reflection into the five topics.

1st entry guide	Some people are aware that they quite often have a conversation with themselves, silently in their heads. Is it the case for you? Please have a look at these ten mental activities and comment on the ones you think you experienced at your work as a geography teacher. Please, bear in mind that not everyone engages in self-talk about each item. 1. Planning (the day, the week or much longer ahead) 2. Rehearsing (practising what you will say or do) 3. Mulling-over (dwelling upon a problem, a situation or a relationship) 4. Deciding (debating what to do, what is for the best)

	5. Re-living (some event, period or relationship) 6. Prioritising (working out what matters most, next, or at all to you) 7. Imagining (the future, including 'what would happen if') 8. Clarifying (sorting out what you think about some issue, person or problem) 9. Imaginary conversations (held with people known to you or whom you know of) 10. Budgeting (estimating whether or not you can afford to do something in terms of money, time or effort) Are there any other themes upon which your own internal conversations dwelt?
1st entry content Format: Date done: Date received:	
2nd entry guide	Think about what your current concerns are. How many of them are related to the geography subject? Among all your concerns, which matters most to you at the moment? Here I provide five prompts for you to think along: prompts: 1. Whether or not these had long been your concerns 2. Whether or not these had long been the geography subject's concerns 3. Whether or not your listings of concerns and the geography subject's concerns were ones that dovetailed smoothly 4. Whether or not you spent time in thinking out exactly what you should do in the light of your concerns

	5. Whether or not you saw (or had seen) anything in your backgrounds which was helpful or obstructive in relation to realising your concerns
2nd entry content Format: Date done: Date received:	
3rd entry guide	Please look forward and discuss how your future work with the geography curriculum related to remuneration, repute and responsibility, to sacrifices and regrets, to support and satisfactions, to ambitions, commitments or re-orientations.
3rd entry content Format: Date done: Date received:	
4th entry guide	1. Name people or resources for a set of questions. 2. Write down these names on a post-it so that you can place them with you on the target (very close, less close, not close). You are in the heart of the target. When you place the post-it closer to you, the closer you feel to them. It is not about the physical distance but about the emotional closeness. Name generator questions: For each question, you can nominate up to 5 names. You can nominate names, organisations, social media channels, group of people, etc. 1. Who are the people you discuss geography curriculum issues? -How often? -What do you speak about?

	2. From whom or where do you seek specific information related to geography curriculum? -How often? -What kind of information? 3. Who are the people you turn for advice on geography curriculum related issues? -How often? -In which issues? 4. Who are the people you get resources for the geography curriculum? -How often? -What kind of resources? 5. Who are the most influential people on your practices in relation to the geography curriculum? -In which ways? 6. Please list anyone with whom you talk about geography curriculum but is not listed here. Alter Attributes: Gender, Occupation Alter Relations: If the people in your target know each other?
4th entry content Format: Date done: Date received:	
5th entry guide	Mapping the future.

	Look again at the target and the names you generated, where would you like to be in five to ten years? -who will move closer to you? -who will drift apart? -who would you like to add in this target?
5th entry content Format: Date done: Date received:	

Phase III: (one-to-one interview)

An open-ended interview based on Phase II materials (teaching materials, reflective diaries)

Stimulated recall of what teachers said and what they did/ claimed to do