

# Teaching Sustainability through Geography: Why Teachers' Underlying Assumptions about the Subject Matter

Ryan Teo

*National Institute of Education (Singapore)  
Nanyang Technological University (Singapore)*

## Abstract

*Geography education in Singapore has evolved alongside national priorities, shifting toward a concept-based curriculum centred on sustainable development. This paper argues that the effectiveness of sustainability education partly depends on teachers' underlying philosophical assumptions about geographical knowledge. The current syllabus reflects an interplay of positivistic, humanistic and critical traditions, requiring educators to navigate multiple epistemologies in their teaching. In addition, it is centered around sustainable development as a core anchor for geographical knowledge. As sustainability demands understanding long-term socio-environmental consequences, teachers must intentionally align philosophy, pedagogy and assessment to model conceptual, reflective and critical thinking. Ultimately, geography's capacity to cultivate sustainability-minded students rests on philosophically aware educators who exercise discernment in classroom practice.*

## Introduction

Geographical education in Singapore has transformed over the decades, in response to the changing geopolitical landscape and

national needs (Chang, 2012). Chang observed changes across time from a focus on regional geography, with content largely centred on locational and descriptive information in the 1950s, to an increased interest in conceptually based geography which sought to provide a framework for geographical knowledge to be categorized, meaningfully understood and applied by students by the 1980s. Since then, there have since been regular revisions to the way that these conceptual frameworks are structured and taught, with new pedagogies such as the inquiry-based learning approach coalescing with the geographical investigation (GI) assessment format in recent years (Ministry of Education, 2021; Ministry of Education, 2022). Underpinning geography education, however, are foundational philosophical understandings of geographical knowledge that is embedded in the syllabus and in educators' own minds. This is crucial, since pedagogical content knowledge (PCK) is an inextricable element of each educator's teaching practice (Segall, 2004), and the internalised geographical ontology and epistemology of an educator influences the development of their PCK. As a result, it is imperative that we consider how individual and nation-wide philosophical understandings of geography have shaped the subject's educational landscape and presently impact the way that educators teach

geography.

### **Philosophical Underpinnings in the Geography Syllabuses**

To begin, we will consider how the shift from regional, descriptive geography to concept-based geography has rewired the overall motivations, purpose and outcomes of teaching and learning geography in the Singapore classrooms. Regional geography aimed to create a categorization of natural and human landscapes and activities through geographical demarcations, understanding these phenomena through some form of spatial collectivization. This was then operationalised as a means of proliferating national identities, allowing people who lived within the same region to have a basis for uniting and collaborating with each other, co-existing peacefully and productively (Paasi, 2009). However, while this approach towards geographical education has had its uses and benefits, it quickly became insufficient for Singapore's educational needs. As a nation which seeks to be globally connected and internationally competitive, a switch away from regionalization towards globalization was imperative (Chang & Kidman, 2024). Furthermore, a regional approach limited the application of geography to a purely descriptive discipline instead of presenting it as the high-utility, nigh-ubiquitous, inter-disciplinary subject that it had the potential to be. With these considerations (amidst others) in mind, the epistemological shift of the geography syllabus made a great deal of sense.

In the last 50 years, multiple revisions have been made, and the most recent geography syllabus across all levels comprise of topics that examine both the physical and human aspects of geography (Chang, 2012). This inclusion of both physical and human geographies within topics also illustrate an important ontological

underpinning of geography education in Singapore – that we do not merely seek to understand space as an objective reality that is separate from human influence, but rather ought to explore how human societies and the physical environment interact with and within each other to generate the spaces and places that we call home. This ideological shift was captured succinctly in the 1990s' thematic distinctions of “Earth as home for people” and “Earth's natural resources and how humans can improve or damage the environment” (Chang, 2012). These two themes, while no longer officially existing in the current geography syllabus documents, have been enshrined in the concept of sustainable development which has now also been integrated in virtually every topic (Ministry of Education, 2021; Ministry of Education, 2022).

What is the philosophical nature of Singapore's geography syllabus? Is it positivistic, humanistic, critically oriented, or a hybridization of these philosophies and more? First, consider the place for positivism in the geography syllabus. With explanation and prediction of phenomena as a basic outcome of positivism, it encourages learners to adopt the scientific method (often transposed as the geographical method of inquiry) to design and conduct investigations not only about static or material physical phenomena and landforms, but also hypotheses about human interactions and societal phenomena. The positivist ontology, applied in geography, provides a useful impetus for using quantitative methodologies. As Harvey (1969) points out – it develops logical rigour and assists in the composition of convincing and applicable narratives that can be appreciated by geography academics and lay people alike. To use positivism and not be bound by its ontological exclusivism - that is, to limit valid knowledge propositions to that of purely controlled, scientific, model-based, theory-driven

claims – is one of the geography syllabus' advantages.

Second, consider the integrative approach of humanistic and phenomenological ideologies in the modern syllabus. With the inclusion of topics such as *Housing* in lower secondary (Ministry of Education, 2022), *Everyday Geographies* and *Tourism* in upper secondary (Ministry of Education, 2021), and *Development, Economy and Environment* in the pre-university syllabi (Ministry of Education, 2023), the concepts of sense of place and belonging, individual motivations for travel and consumption and other human-facing concepts are central and heavily relied upon. Humanistic geography not only broadens the scope for what can be analysed and examined under the umbrella of geography, it also lends itself to qualitative methodologies, which can be paired with quantitative approaches from positivism. This blend of both methodologies are a feature of the synergistic combination of positivism and humanistic-phenomenological epistemologies that allows the current geography syllabus to leverage on the best of both, without being confined to the ontological exclusion of either.

Third, the critical perspective of geographical knowledge which calls for a tacit distrust in observable phenomena, recognising them as part of a superstructure that is largely influenced by the unseen economic base (Harvey, 1973), or a scepticism of basic knowledge claims on the basis of their socially constructed nature which may or may not be grounded in physical reality. This ontological and epistemological perspective is not explicitly incorporated into the geography syllabus but can yet be infused into the teaching and learning of the subject at the discretion and with the wisdom of individual educators. For example, when leading a discussion on

climate change and the role of human activities in the phenomena, educators must be experts about the scientific reasons for climate change and its constituent processes like global warming, the social drivers that cause it, and the economic, social and environmental impacts of the phenomena and the possible solutions to the problem. These can be communicated through a “causality-consequence-management framework” as espoused by (Chang, 2013). However, none of this truly addresses the fact that beneath the surface, it is in fact the capitalistic, consumption-driven, economic development-motivated global system that is resulting in a global resource exhaustion and unsustainable expansion of manufacturing and agriculture into natural forests and oceans, that is morally and physically destroying our Earth. The moral implications of the content and concepts that are covered in geography can only be broached by moral and empathetic, sensitive and wise educators who employ their own critical understanding of the world around them, coupled with the prescribed syllabus (Chang, 2013). This is, in essence, the most important way in which geographic philosophical traditions come together and play an understated but crucial role in geography education in Singapore.

### **Geography Teachers and Sustainability Education**

Moving on, we will consider the reasons why concept-based geography, taught through the lens of a tri-layered philosophy, is well-positioned to educate Singaporean students about sustainable development – perhaps more so than any other subject. Meadows (2020) asserts that the nature of geography as explicitly spatial, possessing a scope that holistically encompasses every aspect of the physical and human environment and their interactions and resultant impacts with and on each other, allows the subject to grasp the broad scope

and spectrum of variables that pertain to sustainable development. To take it a step further, geography has also acquired the necessary terminologies to effectively communicate these elements of sustainable development to students of all ages, making it suitable as a launch pad into public and political discourse (Meadows, 2020).

For an educator the ability to draw from a well-defined nomenclature, with a range of epistemological traditions and complementing methodologies to frame and derive knowledge claims is a significant advantage. It therefore boils down to the teacher's own personal consolidation and technical expertise in wielding the philosophies, pedagogies and terminologies appropriately in their design of lessons and assessments that will determine how well students eventually grasp the concept and relevance of sustainable development. This is precisely why educators' professional development is incorporated in every school and there are calls for associations of educators to constantly gather to refresh and sharpen their perspectives, pedagogical practices and philosophical approaches to meet the needs of geography education (Chang, 2013).

Consider some specific examples in the current syllabus. Sustainable development is positioned as the third theme of each human geography topic in the upper secondary school syllabus (Ministry of Education, 2021). If we take a closer look, there are also clear nods toward sustainable practices even in the physical geography clusters of *Climate* and *Tectonics*, where students are trained to think about how humans affect and are impacted by environmental factors, and the ways we can adapt to develop sustainably. It can be effectively concluded that the outcome of the current Singapore geography syllabus is to lay the foundations, build the appropriate scaffolds, and guide students to think about how all aspects of life need to be

lived and experienced with sustainability at the core. How then can an educator exercise his/her own wisdom and discretion, using the various philosophical paradigms to guide students such that the latter begin to grow in their own geographical wisdom and discretion?

One approach to achieve this is for educators to adopt the Understanding by Design (UbD) approach espoused by Wiggins & McTighe (2005), first considering the learning outcomes, working backwards to consider what would be acceptable evidence to demonstrate those outcomes, and finally planning the most appropriate activities to collect and organise such evidence. This approach spells out the pedagogical development flow that the educator takes but also requires them to be entirely cognizant and intentional about the application of their ontology, epistemology and methodology in constructing geographical knowledge. For instance, when teaching about sustainable tourism development, the educator must consider what big ideas and skills they want to impart to their students. Is there an objectively true or right way to attain a sustainable future for the tourism industry that can be discovered quantitatively? Or is there a need for reflexivity to observe the patterns of anthropogenic activities and propose improvements to the current sustainable approaches to tourism like eco-tourism and community-based tourism? How important, really, is the human experience and individuals' personal understanding of sustainability and tourism in analysing these sustainable tourism approaches? This is determined by the educator's positioning along the positivism-humanism-critical ontology spectrum.

Moving further, in developing the assessment tasks which are not purely for grading students, but which allow students

to flesh out and demonstrate their own reasoning and consolidate their learning of the content and skills, the educator must be crystal clear in the epistemological approach toward the geographical knowledge they desire to communicate. For instance, if the educator wants the student to perceive their geographical education as more than a smattering of content knowledge and haphazard concepts, but rather a moral and ethically-grounded composition of meaningful concepts grounded in real-world scenarios that has relevance to their lives (Chang & Seow, 2018), then there must be a deliberate inclusion of continual and formative assessments which require students to do more than regurgitate spatially distant examples. Assessments must require students to think for themselves, to use both qualitative and quantitative methods of data collection to craft compelling narratives and even question and critically evaluate pre-existing notions of right and wrong, advised and disadvised, to truly progress students toward independent geographical mastery. This must be first modelled by the teacher in class through teacher talk, discussion-based learning, and formal as well as informal inquiry throughout the course of the year. This means that the teacher's epistemology must be wholly congruent with that which they hope their students eventually adopt. The methodologies for this are endless, from GI, technology-assisted learning with programmes like StoryMaps and other geographical information systems (GIS) like Google Earth Pro and Qgis, as well as collaborative learning platforms like Padlet and Google Classroom which allow students to share and build upon each other's ideas both synchronously and asynchronously. The educator's responsibility is to be fluent in these available technologies and their affordances to expand their own students' learning experiences.

While there are undoubtedly many more instances in which an educator's philosophy and pedagogy coalesce to define their teaching practices, I have endeavoured to highlight the main reasons why the educator's underlying assumptions about the nature, construction and application of geographical knowledge impact their approach towards teaching it. Sustainable development is a core concept in the geography syllabus for good cause, being one of the most pressing and prominent discourses of the modern era. Geography, in its (minimally) tri-layered philosophical grounding and broad scope of topics and concepts, is well-positioned to develop students into thinkers and innovators of Singapore's future sustainable development, but this is dependent on educators' constant professional development and willingness to exercise their wisdom, discernment and reflexivity in applying the appropriate philosophical grounding of geography in the classroom.

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