Geography Education (K-12)

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Introduction

Geography education here means the role and purposes of geography *in* primary and secondary education (we are not concerned here with the geographies *of* education). In other words, we are concerned mainly with the educational provision deemed appropriate for the vast majority of children and young people in state-mandated education systems and the contribution geography make to this. From the start, we must acknowledge that it is extremely hazardous to make generalizations regarding these matters across different national and state jurisdictions. Some countries have strong centralized national curriculums with tight controls through state-approved textbooks (e.g., Iran) or high stakes, national inspection systems (e.g., England), while other countries organize education federally (e.g., Germany, United States), often with strong preferences for local control (e.g., Sweden, Finland). In some countries, geography in school is aligned with the sciences (e.g., Finland, where geography teachers usually also teach biology), whereas in others geography is considered to be in the social sciences (as in most of the United States, Japan), and in others it is classified as one of the humanities (as in the United Kingdom). The visibility of geography in schools also varies enormously, with some jurisdictions favoring specialist subject teaching (usually in the secondary phase), while others support more integrated and/or competence-based approaches to the curriculum. We should also note that none of these characteristics is necessarily stable. Education has become highly politicized, as it is often linked closely with economic performance and global competitiveness; thus, for example, countries regularly review curriculum arrangements. Scholarly work and research in geography education is similarly fractured and is, in any case, a relatively small field. International meetings take place under the auspices of the International Geographical Union Commission on Geographical Education (IGU-CGE), regional networks such as

Eurogeo and SEAGA, and the annual meetings of learned societies such as the American Association of Geographers and the Royal Geographical Society (with the Institute of British Geographers). In many countries there are also subject associations (that serve mainly the interests and needs of school teachers) such as the Geographical Association in England, which is one of the oldest (established 1893) and largest (*c.* 6,000 memberships). In view of these introductory comments, it needs to be acknowledged that although the sources in this article on geography education are international in scope, it is impossible to provide equally for the diversity noted in this introduction. Researchers will find articles, resources, and handbooks in their local jurisdictions to supplement those found here.

General Overviews

Given the points made in the Introduction, overviews of geography education tend to be in the form of handbooks, which are quite country specific, for teachers of geography. These typically have a section, which may be quite short, on the justification of geography in the school *curriculum* and its philosophy, followed by the main bulk of the book on *pedagogy* and *assessment*. Though often well referenced, these books are aimed mainly at a professional audience and have practical technique at their heart. Based more on principle and conceptual research rather than empirical evidence, these books are mainstays and are influential in teacher education and training. In the United States, Gersmehl 2014 provides a detailed account of some principles of geography teaching and a practical guide on how to implement these in the classroom. It contains quite a lot of geographical information and is clearly addressing professionals who may have limited geographical qualifications from their own education. In this sense, the book is quite different from its counterpart in the UK context, where Biddulph, Lambert and Balderstone 2015 adopts a tone appropriate to addressing geography specialists. This book is more concerned with contested ideas of geography, and although it contains much in the form of practical teaching technique, this is more in the form of suggestion and at the level of strategy rather than instruction. The Geographical Association also has produced successive handbooks over many years, including Balderstone 2006 and Jones 2017. From the non-English speaking world is Rolfes and Uhlenwinkel 2013, a professional guide that has deliberately assembled an extensive international list of contributors. In addition to professional handbooks, there is a growing literature aimed at the teacher educators and researchers in education (including Masters and post-graduate research students). Butt 2011 is a good example from the United Kingdom, and Walford 2001 provides an historical approach and overview of geography education in the British context. Ida, et al 2015 comprises the first English language overview of geography education in Japan. One of the most extensive and useful sources for researchers is Bednarz, et al. 2013, which is in fact one of three reports from the ‘Road Map’ project funded by the US National Science Foundation.

Balderstone, D., ed. *Secondary Geography Handbook*. Sheffield, UK: Geographical Association, 2006.

With no fewer than forty-two chapters, this book is a monumental achievement of over 500 pages. Its authors range from leading professors of geography and geography education to school teachers. It brings together theoretical perspectives and professional practice.

Bednarz, S. W., S. Heffron, and N. T. Huynh, eds. A Road Map for 21st Century Geography Education: Geography Education Research Washington, DC: Association of American Geographers, 2013.
The Roadmap project reports, although obviously and inevitably US focused, provide an exceptionally useful launch pad for further work designed to improve the practices of thinking geographically and doing geography at school level.

Biddulph, M., Lambert, D., and D. Balderstone. *Learning to Teach Geography in the Secondary School: A Companion to School Experience*. 3d ed. Learning to Teach Subjects in the Secondary School Series. London: Routledge, 2015.
This authored contribution to a large-scale book series is comprehensive and has become a standard text for secondary school geography teacher trainees in the United Kingdom.

Butt, G., ed. *Geography, Education, and the Future*. London: Continuum, 2011.
This discursive book was conceived and written mainly by members of the UK-based Geography Education Research Collective (GEReCo).

Gersmehl, P. *Teaching Geography*. 3d ed. New York: Guilford, 2014.
Unlike many of the other overviews cited here, this is a single-authored text and may therefore consciously stress the personal priorities and enthusiasm of the author—as with its emphasis on spatial cognition, but on the other hand has strong internal coherence.

Ida, Y., Yuda, M., Shimura, T., Ike, S., Ohnishi, K. and Oshima, H., ed. *Geography Education in Japan*. International Perspectives in Geography Vol. 3. Heidelberg, Germany: Springer
This book sets out the position of geography in the Japanese education system and shows how the contents of the geography curriculum has been shaped, and how it may develop in the future in an international context.

Jones, M. ed. *The Handbook of Secondary Geography*. Sheffield, UK: Geographical Association, 2017.
This substantial collection updates its predecessor and consciously aims to be a more concise professional support for specialist teachers of geography. It explicitly invites readers to be part of a 'subject community'.

Rolfes, M., and A. Uhlenwinkel, eds. *Metzler Handbuch 2.0: Geographieunterricht. Ein Leitfaden fur Praxis und Ausbildung*. Braunschweig, Germany: Westermann, 2013.

This is for readers of the German language. It has extensive and impressive range (almost 600 pages) and is truly international in its conception, though dominated by authors from Germany and the United Kingdom.

Walford, R. *Geography in British Schools 1850–2000: Making a World of Difference*. London: Routledge, 2001.

This book uniquely provides a history of geography as a school subject in Britain, presenting us with the significant and often overlooked fact that school geography predates geography as a university discipline by many decades. The book traces the school subject as an element of the social history of the nation.

Reference Resources

There are many websites dedicated to geography education, including many associated with particular individuals or schools. Many of these are interesting, especially as a source of teaching ideas, but are often consciously *not* of the mainstream and/or can be quite "cultish" (e.g. The Geography Collective). In terms of more deliberative and perhaps authoritative websites that can help students, teachers, and researchers wade through the mass of often freely available resources on the internet, we can turn to the learned societies and subject associations. In the United Kingdom, the Geographical Association (GA), which grew out of the Royal Geographical Society (RGS), specifically to encourage the learning and teaching of geography in schools, is perhaps the leading advocate of geography education in the United Kingdom, and it has international reach. Over a century after the GA's establishment, the RGS has now also developed and extensive education work program. In the United States, the National Council for Geographic Education was established in 1915 to celebrate and promote geography in education. Its membership is smaller than the GA (in England) reflecting the less secure position of geography as a subject in the curriculum and its relative invisibility within the social studies in schools. The National Geographic Society (NGS) has supported, since the 1980s, an extensive network of Geographic Alliances in every US state committed to "bringing geography back to K-12 education." With a sharper focus on research the National Center for Research in Geography Education was established in 2015 with co-headquarters at the American Association of Geographers and Texas State University. For geography education internationally, two reference points are Eurogeo, which has extensive links and networks, and the International Geographical Union (IGU), which has a very active Commission for Geographical Education. Two print resources are also worth referencing. Although somewhat dated now, Butt 2000 is still a comprehensive reference resource and guide, and Marsden and Foskett 1998, published by the Geographical Association, is invaluable.

Butt, G. *Continuum Guide to Geography Education*. London: Continuum, 2000.

Though now somewhat dated, this A–Z guide provides a helpful reference point for those entering the field for the first time.

Eurogeo.

The home of the European Association of Geographers, with journals, projects, conferences, and professional materials.

Geographical Association.

Extensive website containing reference resources for both primary and secondary teachers, materials that arise from funded curriculum development projects and a dedicated teacher education pages containing a library and bibliography of both professional and research articles available online.

International Geographical Union.

Formally established in 1922, has a Commission for Education that can be contacted online. The commission organizes regular conferences, sponsors a geography Olympiad, and supports the Journal *International Research in Geographical and Environmental Education*.

Marsden, B., and N. Foskett. *A Bibliography of Geographical Education 1970–1997*. Sheffield, UK: Geographical Association, 1998.

This resource can be found in university libraries. It was updated with a supplementary volume in 2001. The GA has plans to make it available on the website—a useful bibliography of research and professional literature since the period covered by this print publication is accumulating online.

National Center for Research in Geography Education

A very recent initiative made possible by the collaboration of Texas State University (San Marcos) and the American Association of Geographers. Its mission, with funding from the National Science Foundation, is "to build capacity for research that advances theory, deepens knowledge, challenges thinking, and supports evidence-based practices in geography education".

National Council for Geographic Education.

A secure reference resource for the US geography standards *Geography for Life* (revised 2012). Interestingly, the NCGE is now physically housed with the Association for American Geographers, which, like the RGS in Britain, has been developing its education activities during the last decade.

National Geographic Society.
The NGS alliances network works to catalyze “geo-education” or “geo-literacy” across the United States, Canada, and Puerto Rico.

Royal Geographical Society.
Has a growing education presence with a range of information and services for teachers, parents, and students. It also runs several funded projects in partnership with the GA, such as the Action Plan for Geography (2006–2011) and the Global Learning Programme (from 2013).

The Geography Collective.
Describes itself as a group of ‘guerilla geographers’ and has captured the imagination of many teachers. It aims its ideas and materials at children. Perhaps its core overarching theme is to encourage children to venture outside and to use their observation skills and imagination trough ‘playful learning’.

Journals

There are of course many research journals dedicated to geography and its many cognate disciplines and specializations. Geography education is a comparatively small—and recent—subfield of geography with a very small number of specialist research journals. The leading journal in this subfield is International Research in Geographical and Environmental Education (IRGEE), established in 1991. Even more recent than IRGEE is Research in Geographical Education (RGE), which is dominated by American research activity. The Journal of Geography in Higher Education (JGHE) has a wider remit than education and is not often concerned with education in primary and secondary schools, but recognizes the importance of curriculum, pedagogy, and assessment in higher education. The Geographical Association’s academic journal Geography began as the *Geographical Teacher* in 1901 and has for many years had an interest in educational issues and developments but combines this with scholarly articles on geography. It can be compared with its counterparts from the NCGE in the United States, the Journal of Geography and Geographical Education from the Australian Geography Teachers Association (AGTA). Occasionally, geography education research articles appear in the leading geography journals, and a couple of these are cited elsewhere in this article. More professionally oriented journals serving geography education are rather more in number than those addressing research, usually serving a national or regional audience serving the particular needs of teachers and educationists in particular jurisdictions. Thus, TeachingGeography is a well-established, refereed journal aimed at supporting the development of classroom practice mainly in secondary geography. An interesting recent development is the advent of online, open access journals such *as* Review of Geographical Education Online (RIGEO) and European Journal of Geography (EJG).

Australian Geography Teachers Association (AGTA)

The key purpose of the AGTA is to maintain a professional network which can communicate research findings and innovations in geography education. At a time when Australia has, for the first time, a national curriculum framework for geography, it plays an important role and is influential on national decision making bodies.

European Journal of Geography (EJG).

Has a remit to "substantially improve, in a theoretical, conceptual or empirical way the quality of research, learning, teaching and applying geography, as well as in promoting the significance of geography as a discipline." It has a very clear pan-European context.

Geography.

The whole series, around one hundred volumes, is now fully digitized (available via the GA's website). It was radically revamped in 2007 in a conscious attempt to bridge the different worlds of school geography and geography as an academic discipline. It is an academic journal that is designed and edited to appeal to wider audience of teachers and teacher educators internationally, carrying scholarly articles on geography and education.

International Research in Geographical and Environmental Education.

Set up specifically for reporting research in geographic education. This is genuinely international in its scope (unlike for example *Geography*, which despite its intentions, is often limited to addressing UK-based curricula or national education debates). This journal is the most extensive collection of empirical as well as conceptual research in the field.

Research in Geographic Education.

Comparatively less well established and also for the time being is more parochial than IRGEE being based in the Grosvenor Center for Geographic Education in San Marcos, Texas, and as yet less connected to IGU networks.

Review of Geographical Education Online (RIGEO).

A significant feature of this innovation is that it is international in scope, reflected in its articles and its editorial team.

TeachingGeography.

The GA's professional journal for secondary school geography teachers and launched in 1974, a period now recognized as one of significant advancement in terms of curriculum, pedagogy, and assessment.

Its main focus is on classrooms and classroom processes. It has a more recently established companion journal *Primary Geography*, which takes on a similar remit, but for largely non-specialist primary school settings.

Journal of Geography.
From the National Council for Geographic Education (NCGE) in the United States, also carries research articles but perhaps more resembles *Geography* in that it carries both geographical and educational content, which is clearly aimed at a professional audience of teachers as well as researchers.

Journal of Geography in Higher Education.
Also has an education remit and is also an academic journal but focused on pedagogic and curriculum matters in tertiary colleges and universities rather than school settings.

On the Nature of Geography in Education

In the introduction, it was noted that geography is not a singular concept and that many forms of geography exist in educational settings. Bonnett 2008 tackles the question "what is geography?" in a way that is inclusive, even of popular geographies, characterizing geography as an "ancient idea." This is quite different from Matthews and Herbert 2008, which prefers to describe geography as a coherent academic discipline (in mainly the UK context). Thus in any investigation of geography in education, questions concerning the nature of geographical knowledge are germane. The principles guiding the selection of what to teach in schools vary significantly between national jurisdictions, depending partly on how geographical knowledge is conceptualized and valued. Occasionally, journals attempt to overview these differences, such as Gerber 2001. Here, we also provide two sources, from the US and the UK contexts, in order to provide a deeper focus the question. From the United States, Golledge 2002 seeks to identify the unique qualities of geographical knowledge, whilst Hanson 2004 opts to emphasize the value the nature of geographical perspectives. In the United Kingdom, Firth 2011 explores the epistemic features of geography as a discipline from a social realist perspective, arguing that teachers need engagement with this, whilst Jackson 2006 (similar to Hanson) opts to write about the nature and value of "thinking geographically." The international GeoCapabilities project (www.geocapabilities.org) adopted and developed the social realist idea of powerful disciplinary knowledge (PDK) and the significance of geographical thinking in education, as discussed in Lambert, Solem and Tani 2015.

Bonnett, A. *What is Geography?* London: SAGE, 2008.
Bonnett describes geography as a fundamental fascination, to do with the relationships between nations (us and them) and relationships between people and environment. What is particularly interesting (for educationists) is Bonnett's willingness to go beyond the idea that geography exists only as an academic

discipline, allowing us to draw upon a wide range of popular geographical knowledge such as novels, films, and travel guides.

Firth, R. “Making Geography Visible as an Object of Study in the Secondary School Curriculum.” *Curriculum Journal* 22.3 (2011): 289–316.
This is a theoretically informed discussion of what constitutes geographical knowledge. As such this is arguably an overdue contribution to debates concerning geography in education because it explicitly rejects the assumption that knowledge selection in school curriculum design and making is unproblematic. Available online for purchase or by subscription.

GeoCapabilities.
The GeoCapabilities project had its initial phase in 2012 with funding from the National Science Foundation in the US. The bigger, second phase was funded from 2013-17 by the European Union and has attracted interest from around the world. The project has adopted Amartya Sen’s capabilities approach and melded this with the challenging and sometimes controversial notion of geography as ‘powerful knowledge’. The website, aimed principally at teacher educators, contains explanations, materials and training modules which can be accessed at different levels according to the users.

Gerber, R. “The State of Geographical Education in Countries around the World.” *International Research in Geographical and Environmental Education* 10.4 (2001): 349–362.
This paper is based on a survey of 31 countries around the world and provides a late twentieth century snapshot of the constantly changing fortunes of school geography around the world. Available online for purchase or by subscription.

Golledge, R. “The Nature of Geographic Knowledge.” *Annals of the Association of American Geographers* 92.1 (2002): 1–14.
This is a presidential address which makes a case for the “uniqueness” of geography as a scientific discipline: “Today we have all the components deemed necessary to define and justify the existence of a scientific discipline” (p. 12). For the educationist interested in the school curriculum the author’s claim that this “can*not* be acquired only informally or incidentally by casual observation” is important. Available online for purchase or by subscription.

Hanson, S. “Who Are ‘We’? An Important Question for Geography’s Future.” *Annals of the Association of American Geographers* 94.4 (2004): 715–722.
This is a much cited article which introduces the idea of the “geographic advantage.” This is said to be in the questions geography asks, about: relationships between people and the environment; the importance of spatial variability; processes operating at multiple scales; and the integration of spatial and temporal

analysis. The AAG has developed this idea in its educational work Available online for purchase or by subscription.

Jackson, P. "Thinking Geographically." *Geography* 91.3 (2006): 199–204.
Peter Jackson is a leading UK cultural geographer who has maintained a serious interest in the place and role of geography in schools. In this article, he demonstrates "thinking geographically" as a powerful means to make sense of the world, in particular emphasizing its relational perspectives and linking scales from local to global.

Lambert,D., Solem, M. and Tani, S. Achieving Human Potential Through Geography Education: A Capabilities Approach to Curriculum Making in Schools. *Annals of the Association of American Geographers*, 105.4 (2015): 723-735.
This article discusses the significance of the capabilities approach, after Amartya Sen and Martha Nussbaum, in conceptualising the role of specialist fields of knowledge such as geography in the general education of all young people.

Matthews, J., and D. Herbert. *Geography: A Very Short Introduction*. Oxford: Oxford University Press, 2008.
The authors argue, perhaps more formally than Bonnett, that geography is a subject essential to understanding aspects of the modern world and the challenges humanity faces. They provide a brief account of the rise of geography as an academic subject located in universities and present figures to support the claim that geography is now a well-established university discipline based on three core concepts of *space, place*, and *environment*.

Curriculum

Geography as an academic discipline is often regarded as highly disparate and loosely framed, resulting in the notorious definition: "geography is what geographers do." At school level, geography may also lack clear definition despite its appearance in the form of quasi-legal standards and frameworks sometimes referred to as national curriculum requirements. In this section, we identify some key sources informing debates on what to teach in geography at a policy level, and on how teachers interpret national standards in their localized decision-making on what to teach. Conceptually, we distinguish curriculum (*what* to teach, dealt with in this section) from pedagogy (*how* to teach, dealt with in the next section), although it is clearly recognized that in practice the two are blended and often inseparable. We also distinguish curriculum design and development (which need not happen inside school and may not involve teachers directly) from curriculum making (which definitely does take place locally and involves teachers in different classroom settings). The Geographical Association explores the significance of curriculum making as does the GeoCapabilities project. Thus, as a field of scholarship, curriculum is extensive and

complex. The range of sources selected here reflects this. One of the most internationally influential curriculum development projects was the High School Geography project in the United States, and Helburn 1998, written by its director, reflects on its achievements. An early attempt to implement the idea of rational curriculum planning and development in geography is Graves 1979. This book underpinned what the author of Rawling 2001 has called a “golden age” of curriculum thinking in the United Kingdom, and it has had international impact. Roberts 1996 research is significant in that it signals very clearly the limited impact of (simply) issuing national standards without investing in teacher development. Bringing us closer to the present is the discussion in Lambert and Morgan 2010 of curriculum development, in the context of new times and international concern “transferable skills” fit for the twenty-first century. Lambert 2011 discusses the apparent contemporary “knowledge turn” in England, and Brooks, Butt and Fargher 2017 have brought together an international collection addressing the continued need for vigilance: the role of geographical knowledge in education can never be taken for granted. Winter 2009 has provided a rare, short sequence of scholarly accounts of school geography in England specifically for an audience of academic geographers.

Brooks, C., Butt, G. and Fargher, M. *The Power of Geographical Thinking*. Heidelberg, German: Springer. 2017

This book addresses a number of contemporary issues that have an impact on the curriculum and invites researchers from around the world to consider the power of geographical thought and practice in the context of these issues.

Graves, N. “The High School Geography Project of the Association of American Geographers.” *Geography* 53.1 (1968): 68–73.

This can be read in conjunction with Helburn 1998:Graves acknowledges the influence of the HSGP on curriculum thinking in England. Available online for purchase or by subscription.

Graves, N. *Curriculum Planning in Geography*. London: Heinemann, 1979.

This was one of the first single-authored volumes on the (then) new idea of curriculum and its application to geography in education. Norman Graves was an influential figure nationally and internationally in geography education and contributed greatly to how school geography could be conceptualized in a period of rapid change and expansion in education—and in geography as a discipline.

Helburn, N. “The High School Geography Project: A Retrospective View.” *The Social Studies* 89.5 (1998): 212–218.

The HSGP set the standard is many ways for a large-scale curriculum intervention with clear pedagogic principles as well as a powerful concept of the power of geography and geographical thought. In terms of

legacy it has, arguably, been as influential internationally (if not more so) than it was domestically. Available online for purchase or by subscription.

Lambert, D. “Reviewing the Case for Geography and the ‘Knowledge Turn’ in the English National Curriculum.” *Curriculum Journal* 22.2 (2011): 243–264.
This is an analysis of curriculum policy change at a particular point in time in a particular context. It is written partly from the perspective of school geography as a community of practice. This is at once in apart an academic analysis and a “political” statement of intent. Available online for purchase or by subscription.

Lambert, D., and J. Morgan. *Teaching Geography 11–18: A Conceptual Approach*. Maidenhead, UK: Open University Press, 2010.
This book is ambitious in its intentions. In setting out an analysis of school geography and its development, mainly in post Second World War England to the present day, it provides a platform for examining the conceptual underpinnings of the subject in the context of the wider discipline of geography and contemporary geographical thought.

Rawling, E. *Changing the Subject: The Impact of National Policy on School Geography 1980–2000*. Sheffield, UK: Geographical Association, 2001.
This is a very powerful and authoritative case study of the relationship between the school subject and policy making. It is written in part from an insider perspective. Although set in a particular historical period and national context (England), this book is of enduring interest to those delving more deeply into the levels of curriculum between the state and the individual classroom.

Roberts, M. “Interpretations of the Geography National Curriculum: A Common Curriculum for All?” *Journal of Curriculum Studies* 27.2 (1996): 187–205.
This article is important because it provides clear evidence of the severe limitations of naive command and control curriculum reform from the center. It shows the importance of teachers as curriculum makers. Available online for purchase or by subscription.

Winter, C. “Geography and Education I: The State of Health of Geography in Schools.” *Progress in Human Geography* 33.5 (2009): 667–676.
This is the first of a series of articles, updated in the same journal in 2011 and again in 2012, written by a geography educationist and teacher educator for one of the leading academic journals in geography: that is, to be read by academics with limited knowledge of changes and developments in the subject at school level in England. Available online for purchase or by subscription.

Pedagogy

The development of pedagogy and pedagogic technique has been of great interest to geography educationists in recent years, but it would be a mistake to assume that this is solely a recent phenomenon. The role of fieldwork has been a prominent concern in the United Kingdom since the 19th century—perhaps reflecting the heritage of the idea of geography itself, requiring the active exploration, discovery, description, and classification of the world and its features. Fieldwork is currently a target for empirical research as evidenced by, for example, Oost, et al. 2011. See also Lambert and Reiss 2014. The broader question of how to teach geography effectively took hold in the late 19th and early 20th centuries, as geography teaching was gradually established in state-wide education systems. The origin of the Geographical Association in 1893, as an independent off-shoot of the Royal Geographical Society, was at least in part to communicate geography through the use of leading-edge technology of the time, glass lantern slides. This established the GA from the start as an organization not restricted to concerns about geographical knowledge gathering but one dedicated to the pedagogies of communication. Fairgrieve, a key figure in the GA over several decades, wrote arguably the most influential book of its time, Fairgrieve 1926, merging a vision of geography as a subject with assertion about how it should be taught. The development of active learning pedagogies expanded in the second half of the 20th century and is of great interest internationally; for one example, see Kwan and So 2008. A groundbreaking book in this regard, theoretically robust and deeply influential to this day, is Slater 1982. Less theoretically grounded, but enormously influential is Walford 2007. Leat 1998, is a well known but in some ways controversial book, which has influenced practice and research internationally. Thus, UK geography educationists are usually sensitive to the benefits of active learning, the use of language in learning, and the significance of the social construction of meaning, and Roberts 2013 is perhaps the most cogent account of this. In settings as diverse as Singapore, the United States, and the United Kingdom, the recommended pedagogy in geography is often drawn together under the guise of “enquiry learning” and Roberts 2013 is an authoritative account of this. A number of specific pedagogic concerns, including fieldwork, the use of technology, and of enquiry techniques are opened up in a number of referenced think pieces on the GA website.

Fairgrieve, J. *Geography in Schools*. London: University of London Press, 1926.

Having read mathematics at Oxford, Fairgrieve became a geography teacher in 1907 in north London—having undertaken some classes at the London School of Economics under Halford Mackinder. This book can be read as an early theoretical underpinning for school geography. It provides an insight into the origins of school geography in the United Kingdom.

Kwan, T., and M. So. “Environmental Learning Using a Problem-Based Approach in the Field: A Case Study of a Hong Kong School.” *International Research in Geographical and Environmental Education* 17.2 (2008): 93–113.

This is a case study combining interest in problem-based learning (which in other settings may be called enquiry learning or decision making) and learning outside in real-world contexts. Other case studies and examples can be found in this journal, from around the world. Available online for purchase or by subscription.

Lambert, D. and Reiss, M. The Place of Fieldwork in Geography and Science Qualifications. London: Institute of Education, University of London.
This pamphlet overviews research evidence that may guide policy on the use of fieldwork in formal qualifications in the UK education system. It is available from the Field Studies Council website: http://www.field-studies-council.org/media/1252064/lambert-reiss-2014-fieldwork-report.pdf

Leat, D. *Thinking Through Geography*. Cambridge: Chris Kington, 1998.
This teachers' guide is based on a selection of learning theory and was highly influential on UK geography teachers in the early years of the century. However, it treats the development of geographical knowledge as almost incidental to the matter of developing thinking skills (sometimes dubbed "learning to learn").

Oost, K., B. De Vries, and J. Van der Schee. "Enquiry-Driven Fieldwork as a Rich and Powerful Teaching Strategy: School Practices in Secondary School Geography Education in the Netherlands." *International Research in Geographical and Environmental Education* 20.4 (2011): 309–325.
This article perhaps calls into question the combination of cognitive and affective benefits of fieldwork, not so much the claim that these exist, but the rhetoric-reality gaps that may exist between what is said to be the potential of enquiry-based fieldwork methods and the practical capacities of teachers to realize these (for whatever reasons—and there may be many). Available online for purchase or by subscription.

Roberts, M. *Geography Through Enquiry*. Sheffield, UK: Geographical Association, 2013.
This book is research based and scholarly but is full of practical guidance based on academically sound principles. One interesting contrast with Slater's 1982 book, which arguably introduced the notion of enquiry learning to school geography, is in the title. It is at least implied by Slater that geography is (merely?) a vehicle for learning. Roberts on the other hand implies that geographical meaning is the object of study.

Slater, F. *Learning Through Geography*. London: Heinemann, 1982.
This book has been used extensively around the English speaking world as a theoretically robust platform on which to base the teaching of geography in a manner that respects the agency of the student

as learner, the importance of language development in learning and the importance of values clarification and analysis in making meaning of the world.

Walford, R. *Using Games in School Geography*. London: Chris Kington, 2007.
Rex Walford, a major figure in UK school geography in the last quarter of the 20th century. This book is an update on his published work in this field stretching back to the 1970s, which at that time was a radical statement of active pedagogies in geography.

Assessment and Evaluation

Assessment in education is an enormous field of research and practice, not least because national systems around the world need accountability measures to ensure value for money: education may be thought of a good in itself, but this is rarely in itself a convincing argument to hard pressed taxpayers who fund schools. As in curriculum and pedagogy there is a large professional literature on assessment in geography, and Butt and Weeden 2009 is a good example. There is relatively little empirical research on assessment methods and approaches in the specific field of geography. Lambert and Purnell 1994 published some research on the challenges of international testing, an enduring interest as evidenced by Van der Schee et al 2010. Davies 1995 presents important articles on national testing in geography (in England's national curriculum context); and Butt, et al. 2011 contains research on assessment practice. Equally important is conceptual work, particularly that which distinguishes formative from summative assessment, or in the case of Bennetts 2005, that which clarifies what we mean by "making progress" in learning geography. A potentially significant research focus on "learning progressions" has now been established in the United States by Solem et al 2015, coordinated by the National Center for Research in Geography Education (NCGRE). See also Solari et al. 2017. If *assessment* is concerned mainly with the measurement of attainment, usually of the acquisition and application of geographical knowledge, understanding and skills, *evaluation* is concerned with the making of judgments about effectiveness or even efficacy of geographical courses of study. Edelson, et al. 2013 develops these distinctions clearly. Evaluation often draws on evidence in the form of student assessment scores, but it can also combine this with broader indicators including direct classroom observations and interviews.

Bennetts, T. "The Links between Understanding, Progression and Assessment in the Secondary Geography Curriculum." *Geography* 90.2 (2005): 152–170.
Drawing from a deep and extensive prior experience as senior Her Majesty's Inspector (HMI) for geography in England, this article is based on doctoral research and is an authoritative way in to the highly complex and contentious questions of how young people make progress in learning geography and how it is possible to measure this. Available online for purchase or by subscription.

Butt, G., and P. Weeden. *Assessing Progress in Your Key Stage 3 Geography Curriculum*. Sheffield, UK: Geographical Association, 2009.

This is a short book for a professional audience designed to strengthen mainly formative assessment practices in geography, in the early years of secondary schools in England. It is written under what has become a dominant aspect of pedagogic development, that effective assessment practice enhances achievement in geography (that is, assessment *for* learning as distinguished from assessment *of* learning, which has a more summative purpose)

Butt, G., P. Weeden, S. Chubb, and A. Srokosz. "The State of Geography in English Secondary Schools: An Insight into Practice and Performance in Assessment." *Research in Geographical and Environmental Research* 15.2 (2011): 134–148.

This article provides some empirical evidence to inform an increasingly anxious debate in the United Kingdom (and by no means confined to the United Kingdom) on the impact of high stakes assessment practices on teaching and learning behaviors. Available online for purchase or by subscription.

Davies, P. "An Inductive Approach to Levels of Attainment." *International Research in Geographical and Environmental Education* 4.1 (1995): 47–65.

This is a relatively rare article in geography education research to provide theoretical advance based on quite large data sets—arising from attempts, following the introduction of a geography national curriculum in England for the first time in 1991, to drive standards through sophisticated national testing instruments. Available online for purchase or by subscription.

Davies, P. "Levels of Attainment in Geography." *Assessment in Education* 9.2 (2002): 185–204.

In some ways, this is a continuation article written in the context of the second revisions of the national curriculum statutory orders, which moved geography from being defined by 184 separate *statements of attainment* to ten, broad best fit *level descriptions*. Available online for purchase or by subscription.

Edelson, D. C., J. A. Wertheim, E. M. Schell, R. J. Shavelson, and S. Bednarz eds. Creating A Road Map for 21st Century Geography Education: Assessment. Washington, DC: National Geographic Society, 2013.

This report is a thorough overview and analysis of the role and purposes of assessment, particularly in terms of improving geography education and the quality of student outcomes. It also proposes a practical assessment framework—and has a reasonably extensive and helpful reference list.

Lambert, D., and K. Purnell. "International Testing in Geography: Comparing Students' Achievements within and between Countries." *Assessment in Education* 1.2 (1994): 167–179.

This article is a critical review of the difficulties and challenges arising from attempting international testing in geography. It is based on “Intergeo,” a trial set up under the auspices of the International Geographical Union Commission on Education. It raises the question of the culturally situated nature of geography as it is expressed in different national jurisdictions. Available online for purchase or by subscription.

Solari, M., Solem, M. and Boehm, R eds. *Learning Progressions in Geography Education*: *International Perspectives*. Heidelberg, Germany: Springer. 2017.
This book presents a state of the art overview on how the concept of “learning progressions” is understood across ten countries around the world. The idea of progression is problematized and the book serves as essential reading for practitioners and researchers wanting to develop expertise in this aspect of education.

Solem, M., Tu Huynh, N. and Boehm, R. eds. *Learning Progressions for Maps, Geospatial technology, and Spatial Thinking: A Research Handbook*. Newcastle, UK: Cambridge Scholars Publishing. 2015.
This book has resulted from a series of workshops which brought together researchers from mathematics and science education and geography educationists in order to explore research priorities and opportunities in geography. The intention is that this ‘handbook’ will be able to support a network of researchers in geography in order to provide an evidence base in relation to K12 national standards.

Van der Schee, J., Notte, H. and Zwartes, L. Some thoughts about a new international geography test, *International Research in Geographical and Environmental Education*, 19.4 (2010): 277-282.
This is a short reflection on a potentially very significant innovation, which is to establish a meaningful international test in geography to sit alongside well-established international testing in, for example, mathematics. This is part of a long-term campaign under the auspices of the IGU Commission for Geography Education

Young People and Geography

There has been a growing academic interest in the geographies of children, marked in the early years of the 21st century by the establishment of the specialist journal, *Children’s Geographies*. Educationists such as Pyyri and Tani 2016, have begun to take an interest in this emergent field. Related to this has been the long-standing educational interest in children’s abilities as learners, as discussed in Spencer, et al. 1980. In the UK this has developed into a widespread interest and concern for understanding children’s agency as learners, as well as considerations of what prior learning (including the geographic) children bring with them into the classroom, which has been researched in Biddulph 2011. Running alongside this trend has been a concern to ensure that schooling is relevant and serves the needs of

young people as directly and as effectively as possible, fueling research interests in how children perceive geography, as in Biddulph and Adey 2004, and their conceptions of the subject, as in Hopwood 2012. Developments such as these have been the basis of considerable scholarship and research that has, through Catling and Martin 2011, attempted to reconfigure geography in primary schools, introducing the notion of 'ethnogeography'. Butt, et al. 2004 provides one example of research that has been conducted on gender differences, both in the perception boys and girls have of the subject and in their achievement levels. Close on the heels of these concerns about the relationship between the subject, teachers, and the learners lie questions of what should be taught children (see Curriculum), and indeed, the preparedness of teachers to teach specialist geographic knowledge: Brooks 2016 touches on this in a thorough overview of influences on teacher identity . Published during the latter years of the 20th century, Marsden 1997 recognizes that there are considerable risks of confusing social and child-centered priorities with subject knowledge matters in education, a theme taken up by Standish 2012.

Biddulph, M. "Young People's Geographies; Implications for School Geography." In *Geography, Education and the Future*. Edited by G. Butt. London: Continuum, 2011.
This is a useful overview chapter that brings together, and places in wider context (e.g., of UNESCO and the rights of children) a significant initiative of the Geographical Association: the Young People's Geographies project, part of a government funded Action Plan for Geography (2006–2011), designed to support and develop geography in the curriculum of English schools.

Biddulph, M., and K. Adey. "Pupil Perceptions of Effective Teaching And Subject Relevance in History and Geography at Key Stage 3." *Research in Education* 71 (2004): 1–8.
This article is based on a small scale investigation during a period of declining numbers of students in England choosing to study geography beyond the statutorily compulsory years of the national curriculum (5–14 years). Available online for purchase or by subscription.

Brooks, C. *Teacher Subject Identity in Professional Practice: teaching with a professional compass*. (2016). Abingdon, UK: Routledge.
This book is based on, and is an extension of, doctoral research conducted to investigate specialist, 'expert' teachers of geography in secondary schools in England. In addition to the importance of the subject discipline (providing 'something to teach') the research revealed a number of other motivations, including for some a passionate interest in pupils as individuals.

Butt, G., P. Weeden, and P. Wood. "Boys' Underachievement in Geography: An Issue of Ability, Attitude or Assessment?" *International Research in Geographical and Environmental Education* 13.4 (2004): 329–347.

This article perhaps takes an untypical approach to gender in education by looking at boys' underachievement and, in doing so, reveals complexity to do with notions of ability, but also with gendered pedagogies and assessment processes. Available online for purchase or by subscription.

Catling, S., and F. Martin. "Contesting Powerful Knowledge: The Primary Geography Curriculum as an Articulation between Academic and Children's (Ethno-) Geographies." *Curriculum Journal* 22.3 (2011): 317–335.

This article opens up discussion on Michael Young's influential idea that the school curriculum is (should be) primarily concerned with powerful knowledge. Both authors have published on the agency of young children and the nature of geography in the primary years. This article draws mainly from Fran Martin's doctoral research, which presents the concept of ethnogeography as a paradigm for primary geography. Available online for purchase or by subscription.

Hopwood, N. Geography in Secondary Schools: researching pupils' classroom experiences. (2012).

Based on doctoral research, this book provides a thorough and authoritative overview of geography in school as perceived by young people (again, in the English context).

Marsden, W. E. "On Taking the Geography Out of Geographical Education." *Geography* 82.3 (1997): 241–252.

The analysis presented here shows the evident risk, despite a national geography curriculum, that the virtues of the subject discipline can submerged by social purposes and educational priorities and orthodoxies. This is a warning, arguably, of the dangers of over-emphasising "child centeredness." Available online for purchase or by subscription.

Pyyry, N., & Tani, S. Young people's play with urban public space: Geographies of hanging out. In Horton, J., & Evans, B. eds., Vol. 9 of Skelton, T. ed. *Geographies of children and young people*. (2016). Singapore: Springer.

This chapter, from two leading Finnish geography educationists, makes an important contribution to the field of children's geographies - from the perspective of education researchers. It is sympathetic to children searching for meaning and identity and is an antidote to anyone whoimagines education is simply 'done to' children, as if they were not agentive *subjects* in their own right.

Spencer, C., N. Harrison, and Z. Darvizeh. "The Development of Iconic Mapping Ability in Young Children." *International Journal of Early Childhood* 12 (1980): 57–64.

An example of a large body of research on children's spatial abilities, in this case their recognition of aerial photographic images. Available online for purchase or by subscription.

Standish, A. *The False Promise of Global Learning: why education needs boundaries*. (2012). London, Continuum.

This book focuses on Standish's concern to make important distinctions, such as that between education and indoctrination. He argues that teachers, in this case geography teachers, have been undermined by the confusion of the aims of true education with economic, social, political and therapeutic purposes.

Making and Using Maps and Spatial Cognition

It has been said that whilst history is about chaps, then geography is about maps. For chaps, we should read women and men: and for maps, we may read print and digital. Of course, equating geography only with maps and mapping provides a somewhat restricted definition of the subject, but their centrality in school geography, and more recently the use of spatially located data with geographic information systems (GIS), cannot be doubted. In the United States, and in other jurisdictions, there has been an enormous interest in spatial cognition, illustrated by the interesting paper and ensuing discussion in Gersmehl and Gersmehl 2006, and the proposition from Jekel and Gryl 2015 that there is something identifiable called 'spatial citizenship'. But there has been a long tradition of interest, for example by scholarly works like Boardman 1983, and more recently Wiegend 2006, partly because children's spatial abilities as measured by their creation and use of maps has provided a ready empirical base for applying Piagetian theories of learning in geography, as in Blaut 1997. In some jurisdictions, possibly where geography in school is weak, the skills associated with spatial thinking have been given special emphasis in recent times, as if this captured geography's unique selling point, providing the key to geographic enquiry. Thus the NRC 2006 report has excited great interest in the United States and beyond. Bednarz and van der Schee 2006 reflects the, growing interest in studying the take up and impact of GIS in schools. Milson, et al. 2011 provides the most thorough international account to date of GIS in secondary schools. Arguably, an aspect of mapping that has received scant attention in comparison to the early days of geography in schools is the use and understanding of world maps and atlases. Indeed a question arises as to the extent to which what used to be called mathematical geography (including map projections) is taught at all in schools today. Wright 2003, written by one geography educationist, tries to keep this matter on the agenda, for moral as well as technical reasons.

Bednarz, S., and van der Schee. "Europe and the United States: The Implementation of Geographical Information Systems in Secondary Education in Two Contexts." *Technology, Pedagogy, and Education* 15.2 (2006): 191–206.

This is a relatively rare international comparison, drawing on empirical evidence, of the cultural, technological, and practical challenges of implementing GIS in schools. Available online for purchase or by subscription.

Blaut, J. “The Mapping Abilities of Young Children: Children Can.” *Annals of the Association of American Geographers* 87.1 (1997): 152–158.
This article (and another: Blaut J. 1997. “Piagetian Pessimism and the Mapping Abilities of Young Children,” *Annals of the Association of American Geographers* 87.1: 168–177) provides a research-based position on the spatial abilities of young children and is a response (which was not without response) to the apparent rigidities of Piaget’s developmental stages. Available online for purchase or by subscription.

Boardman, D. “Spatial Concept Development and Primary School Work.” In *New Directions in Geographical Education*. Edited by D. Boardman, 119–134. London: Falmer, 1983.
This is a much-cited chapter providing a standard position on young children’s spatial understanding in the English primary school context.

Gersmehl, P., and C. Gersmehl. “Wanted: A Concise List of Neurologically Defensible and Assessable Spatial-Thinking Skills.” *Research in Geographic Education* 8 (2006): 5–38.
This article, which claims to be based on a review of 900 research articles, is an audacious attempt to identify twelve spatial skills, all of which relate easily to the larger idea of thinking geographically. The article sets up a discussion that is published (with a retort by the Gersmehls) in *Research in Geographic Education* 9.2 (2007): 3–47.

Jekel, T., Gryl, I. and Schulze, U. Education for Spatial Citizenship. In Muniz Solari, O., Demirci, A. and Schee J. eds. *Geospatial Technologies and Geography Education in a Changing World: advances in geographical and environmental sciences.* (2015). Tokyo: Springer.
Internationally there has been much interest in ‘the spatial’ and the role of rapidly advancing technologies in the field on education, and this chapter, from two Austrian geography educationists, goes one stage further and proposes the designation of spatial citizenship.

Milson, A. J., A. Demirci, and J. J. Kerski, eds. *International Perspectives on Teaching and Learning with GIS in Secondary Schools*. London: Springer, 2011.
This is a book containing practical case studies and designed to encourage to uptake of GIS in classrooms

National Research Council. *Learning to Think Spatially: GIS as a Support System in the K-12 Curriculum*. Washington, DC: National Academies Press, 2006.
This is an extensive committee report that takes thinking spatially through the use of GIS as a whole curriculum matter, that is, beyond the realms of geography as a school subject.

Wiegend, P. *Learning and Teaching with Maps*. London: Routledge, 2006.
Written by a geography educationist and author of many children's atlases, this is aimed at informing a professional market. It offers practical teaching strategies and is based in a deep engagement with research in the field.

Wright, D. "World Maps in Geographical Education: A Traditional yet Radical Agenda." *International Research in Geographical and Environmental Education* 12.1 (2003): 1–5.
In some ways a maverick enthusiast rather than sober researcher, David Wright's prolific writing on maps in geographic education is disciplined and a useful reminder of the core of school geography. His work can also be accessed online. This guest editorial is available online for purchase or by subscription.

School Geography and Cross Cutting Themes

Geography in schools has often been seen as a vehicle, or a medium, of education (see Pedagogy section). It is thus seen as a means to an end rather than an appropriate end in itself, and Marsden 1997 (cited under Young People and Geography) has pointed up the tensions that can arise from such a position. Standish 2012 (cited under Young People and Geography) tries to develop this argument and identify the tension that arises when the geography curriculum is deployed to deliver good causes like environmental education (or education for sustainable development) and citizenship education (including global learning and/or international understanding). Corney 2006 researches such potential tensions from the point of view of teacher identity, as does Brooks 2016 (also cited under Young People and Geography). On the other hand, putting geographical thinking to work in a way that deepens and extends children's capacities to make meaning of their lives in the context of society and the environment gives rise to some of the most imaginative and engaging educational experiences. Cross-cutting themes, such as environment and citizenship (including the envisioning of alternative futures), forces teachers to consider critically the relationship between geography and education, and Morgan 2012 excels in this. From a US perspective, Kenreich 2013 is a collection that attempts to relate contemporary research in geography with a critical role for geography in education. The selection of sources below centers mainly on education for sustainable development, and the highly significant contributions, especially to theorizing this field, of Huckle 2006 and Huckle and Sterling 1996. Geography education has also in some case embraced the notion of 'futures education', promoted over many years by David Hicks 2014. An overview of a range of other issues, including for example, global learning, employability, and the impact of technology, can be found in Jones and Lambert 2017.

Corney, G. "Education for Sustainable Development: An Empirical Study of the Tensions and Challenges Faced by Geography Student Teachers." *International Research in Geographical and Environmental Education* 15.3 (2006): 224–240.

This is a small-scale piece of research, selected because it raises a fundamental question about teachers' identity in the context of initial teacher preparation. Available online for purchase or by subscription.

Hicks, D. *Educating for Hope in Troubled Times: climate change and the transition to a post-carbon future*. (2014). London: Trentham/IOE Press.
This is a readable and practical book which is the latest from the leading proponent on Futures education in the UK. David Hicks is an authoritative voice whose work is not overtly ideological but is very sensitive to the realities of classrooms and committed to the principle that geography education should contribute to a 'better world'.

Huckle, J.. Education for Sustainable Development: A Briefing Paper for the Training and Development Agency for Schools. 2006.
The paper has links to more than one hundred websites and an extensive bibliography.

Huckle, J., and S. Sterling, eds. *Education for Sustainability*. London: Earthscan, 1996.
Although a little dated, this collection is still an excellent overview of the field, co-edited by John Huckle, a prominent UK geography educationist with a strong commitment to critical education and ESD).

Kenreich, K., ed. *Geography and Social Justice in the Classroom*. New York: Routledge, 2013.
This is a significant book that attempts to connect research from the academic discipline of geography with the school classroom. It explores the role of critical pedagogy in school geography and makes a distinctive contribution to contemporary debates that, in jurisdictions around the world, are often dominated by the delivery of national standards and basic competences

Jones, M. and Lambert, D. eds. *Debates in Geography Education*. 2nd Edition. London: Routledge, 2017.
Largely from the UK context, this collection of twenty-three chapters provides a contemporary overview and a "way in" to several cross-cutting debates and themes in the field of geography education.

Morgan, J. *Teaching Geography as if the Planet Matters*. London: Routledge, 2012.
An extremely thought provoking single-authored book on school geography in its socio-cultural setting. This is aimed at geography educationists and, while it does not pretend to offer practical lessons for the future, it provides a means to think through some of the tensions and dilemmas noted above.

Standish, A. *The False Promise of Global Learning: Why Education Needs Boundaries*. New York: Continuum, 2012.

This is also a single-authored book, but takes a very different line from Morgan. It can be read as a traditionalist call to arms to re-assert the identity of geography as a subject. This book is arguably less convincing in its historical and cultural analysis than Morgan and less forward facing. However, the two books may have more overlapping concerns than initially it appears.