# Teaching Geography

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Teaching Geography Cover image: Clouds surrounding the Malvern Hills. Source: ©Adobe Stock Photo



### Accompanying online materials

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# Editorial

It gives me great pleasure to welcome you to the Spring 2020 issue of *Teaching Geography*.

In her GA Presidential year Gill Miller has urged us all think how and why (and to whom) 'geography really matters', a theme continued into 2020's GA Annual Conference. This can be neatly illustrated by the striking cover image of the Malvern Hills; the ever-changing landscape, both physical and metaphorical, provides the backdrop for geography teachers to consider our place in the lives of the young people we teach. The image is drawn from Duncan Hawley's article on harnessing the 'awe and wonder' of the natural world in our geography lessons. He suggests that we must ensure that the 'powerful knowledge' of geography is taught to pupils to help them develop the capabilities on which their future lives will depend. The GA was a key partner in the GeoCapabilities project which helped develop many of these ideas, and it is a theme I have recently written about too (Bustin 2019) and Duncan relates these ideas to studies of physical geography.

A couple of the articles in this edition follow up articles from last year. Last Autumn, Charles Rawding wrote a provocative 'Raising issues' article in which he argued we should not be teaching the Burgess model anymore as it is outdated and wrong. It certainly got a range of responses! In this edition we bring you a range of views from Twitter, as well as a more formal response from Steve Puttick, who argues the Burgess model still has a relevance in the classroom. Inspired by the debate, I delve into the archive to explore the teaching of another old idea, Christaller's central place theory, using the store of GA articles available on the website. Lauren Hammond, David Mitchell and Maria Polombo's article is a follow up to their Spring 2019 article in which they encouraged those who mentor trainee teachers to take part in a survey; this article reports on the findings from that survey on the status and role of mentoring to support beginning teachers.

I am pleased we have a few first-time writers publishing articles in this edition. Alice Matthews completed the research on which her article is based whilst on her PGCE course last year. Her article explores a creative use of freely available web resources to create virtual fieldwork in glacial landscapes.

A number of established writers have also contributed this edition. Simon Oakes reviews the introduction of the 'places' topic which was made mandatory in the current A level specifications. His article outlines successes but also some challenges for teachers in the teaching of this topic, one of which is the perceived difficulty for teachers of teaching relevant and engaging content that goes beyond the textbook. In many ways Sophie Brand, another first-time writer, provides a response to some of these challenges in her article about developing a sense of place through fieldwork. Her ideas have obvious benefits to those of us who help prepare students for the non-examined assessment (NEA) at A level. Simon and I were teachers in the same school many years ago and Sophie was one of our shared A level students so it is great to be able to include her ideas in this edition now she is herself a geography teacher.

Mark Enser's article looks at curriculum design and the 'interweaving' of topics. He offers interesting examples of how a GCSE course might be organised to maximise linkages between otherwise disparate topics. Grace Healy's article on assessment picks up a similar theme; that students need to be assessed on work across the full range of their studies rather than simply the last few lessons and as such she argues assessment needs to be built into much broader curriculum thinking.

As we approach the run up to the public examination season for many of our students, Elizabeth Rynne, Luke Hinchliffe, John Hopkin, David Gardner and Erica Pilkinton discuss the feedback from the 2019 GCSE examination series, and summarise the main findings from the various Examiners' reports. This will be of use to those of us who teach GCSE classes to ensure we can prepare our students in the best possible way this summer.

This edition of *Teaching Geography* certainly outlines a range of ways that 'geography really matters' and how the subject remains relevant and engaging for our students; whether it is about the teaching of place, awe and wonder of the physical world, fieldwork both real and virtual, or discussions about what we choose to teach, how we teach and assess it and how we support those who are training to teach. Teaching geography really matters! Richard Bustin, Editor

Richard Bustin is guest Editor for this issue of Teaching Geography.



Richard Bustin. Photo: © Lancing College.

#### Spring 2020

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#### Steve Puttick

# Raising **Issues**

Steve responds to the 'Raising Issues' article from the autumn issue of Teaching Geography.

# Taking Burgess out of the bin

This article was stimulated by Rawding's (2019) provocative suggestion in Teaching Geography that the Burgess model (Burgess, 1925) should be put 'in the bin'. He dismisses 'the total inadequacy of obsolete, simplistic models such as Burgess in understanding the complexity and dynamism of an urban area' (p. 96). Therefore, he believes that the Burgess model 'has no place in the geography curriculum and should never have achieved acceptance as a model of urban structure ... It is still in use today. And it shouldn't be!' (p. 94). Part of Rawding's argument is very reasonable – particularly his criticisms of simplistic 'application' of the Burgess model. However, I think there are some good reasons to teach about the model. More broadly, I want to suggest that the challenge for geography education is to better understand the context of knowledge production and to critically engage with representation. To put it another way, I believe that how teachers use models is more important than the models themselves.

#### Obsolete and simplistic?

Recent examples of academic geographers' engagement with Burgess's model challenge claims about its 'total inadequacy'. For example, in analysing distance from the city centre, terrain and waterfronts, and their relation to patterns of income, Meyer and Esposito (2015) conclude that 'The "Chicago models" [Burgess, Hoyt, Harris and Ullman] may best describe the most recently built American cities and may be more relevant than ever today in explaining the dynamics of urban form' (p. 314). Similarly, the Routledge City Reader, claiming to include the 'essential writings' (LeGates and Stout, 1996, p. xii), continues to dedicate space to Burgess, recognising his influence as 'both widespread and long-standing'. Indeed, Duncan (1996) goes so far as to call the concentric zone model 'the most famous diagram in social science' (p. 256). LeGates and Stout (1996) describe The Growth of the City (Burgess, 1925) as a 'seminal analysis of the interrelation of the social growth and the physical expansion of modern cities [which] served generations of other urban sociologists, geographers, and planners as a kind of "prolegomenon"' (p. 89). That is, as a prologue or introduction: one aspect of the role models like Burgess's might play in school geography as an important part in the history of our attempts to understand and represent cities.

#### A contested model

One part of this history comes through Quinn's (1940) description of strong reactions to Burgess: 'this hypothesis has been both widely approved and severely criticised ... declared valid by some when applied to the cities of Chicago, Long Beach, Montreal and Rochester; ... accepted by many as a valuable frame of reference for interpreting a variety of urban data ...' (p. 210). Quinn identifies two types of criticism:

- those arguing that no ideal pattern could possibly exist;
- those admitting a tendency toward a theoretical ideal pattern, but arguing that the gap between real cities and Burgess's concentric model make it unworkable.

Rawding seems to offer an example of the latter: it is not that such models could never usefully represent real cities, but that this particular example 'should never have achieved acceptance as a model of urban structure' (Rawding, p. 94). However, there is a sense in which it never was 'a model of urban structure' - in Burgess's terms, it was an attempt to illustrate 'the typical processes of the expansion of the city' (Burgess, 1929, p. 92). Nor was it Burgess's only model of the city: he later argued that the concentric zonal hypothesis only potentially applied to 'plains' cities and proposed a typology for process accounting for altitude, describing the 'heterogeneity of community life, the rapidity of social change, and the high rate of mobility ...[which] give the reader a vivid and concrete picture of the complexities of the processes of life of the modern city with its polyglot population, its thousand and one occupational and cultural groupings' (p. 135).

The concentric zonal hypothesis was also, significantly, (only) one aspect of a chapter subtitled 'an introduction to a research project' (Burgess, 1925). 'Seeking to describe what [Burgess] called "the pulse of the community", [he] devised a theory that was a thoroughly organic, dynamic, and developmental ... process – "process" was one of Burgess's favourite words

- that gives "form and character to the city" (LeGates and Stout, 1996, p. 89). LeGates and Stout go on to describe two senses in which the concentric zone model might be understood:

- 'as merely a map of contemporaneous Chicago';
- as 'a theoretical diagram of a dynamic process' (p. 89).

The focus on dynamic process echoes space-time conceptions by distinguishing between ecological distance (measured in terms of time and cost), and linear distance (measured in metres and miles). For example, see Schoelen and Thebpanya's (2016) exploration of the 'relationship between population density and travel-time-to-center (TTC)' (p. 40). A similar principle was used by Wei and Knox, (2015), whose cluster analyses explored the spatiotemporal patterns of land use change in the North Carolina Piedmont. They had assumed that Burgess's concentric hypothesis would fail to provide any useful representation, but were surprised to find significant similarities between the empirical data and the idealised type. In a different way, Stannard's (2006) analysis of Italian cities brings a range of data into a productive dialogue with the heuristic of 'classical' urban land-use models derived from Burgess's. In each case (Wei and Knox, Meyer and Esposito, Schoelen and Thebpanya, 2016, and Stannard) their productive engagement with the model, in combination with its historical significance, supports arguments for the continuing to critically engage with the Burgess model in school geography.

### Critically engaging with the Burgess model

Models represent. This representation necessarily involves simplifications (McGuirk and O'Neill, 2007), and there are important curriculum questions to explore about the use and limitations of models in school geography. The intellectual challenge of teachers' curriculum making includes wrestling with how to use the partial simplifications provided by models to help students grasp super-complex realities.

With an A level group, teaching about Burgess's concentric zone model might include giving students access to the original chapter (Burgess, 1925) – or a summary (such as some of the selected guotes presented above) - and then exploring questions such as: Who developed this model? Why did they develop it? What assumptions does it make about homogeneity within zones? Through what metaphors does it construct the city? What are the implications of these (organic) metaphors? What aspects of the city does this representation emphasise? What and who - does it obscure? How does it interact with structural issues of race, class and gender? To what extent do you think it functions as a 'useful fiction' (Puttick, 2017)?

With an ITE group, this article could be used alongside Rawding's to stimulate a slightly different discussion about more general issues, to do with the use of models and representation in school geography. For example, after reading both articles, ask: Do the limitations of models make them worthless in school geography? How simple is too simple? How can we teach students about dynamic urban processes through 2-D static representations? How should our presentation and use of models with 11-year-olds and 18-year-olds differ? | **TG** 

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#### Feedback

If you have any comments or views that you would like to share on this article please email Elaine Anderson at the GA (eanderson @geography.org.uk) and we will aim to include a number of them in the next issue of *Teaching Geography*.

#### Steve Puttick is Associate Professor of Teacher Education at the University of Oxford and is a member of the Geography Editorial Collective.

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Twitter: @Steve\_Puttick

### Raising issues: 'Putting Burgess in the bin' discussions

Charles Rawding's article in the Autumn 2019 issue of *Teaching Geography* certainly created a lot of discussion on social media, particularly on Twitter. Below are a few of the many responses to the article.

Some teachers leapt to the defence of teaching the Burgess model.

#### Matt Potter @mpotter21

Replying to @RichardBustin @EnserMark and @The\_GA

I always teach Burgess. We go through the model, map it onto local area & then discuss. Students never fail after this to tell me why its a problem. Agree its outdated but its part of the story of our understanding. Context matters as is opportunity to develop critical thinking.

2:14 PM - Oct 20, 2019 - Twitter for Android

13 Likes



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# The findings of the survey of mentoring in geography education

Last year's survey of geography mentors (Hammond et al., 2019) aimed to provide mentors with an opportunity to share their ideas about, and experiences of, mentoring. It posited that although mentors, who we conceptualised as an under-used and under-represented community in geography education, are increasingly recognised in policy about (initial) teacher education (Carter. 2015; DfE, 2016; 2019), there has been relatively little consideration of the role of the subject in mentoring. This raises concerns that mentoring could become over-focussed on the technical and managerial elements of teaching and neglect the complex process of 'curriculum making' (GA, 2009; Lambert and Morgan, 2010). This requires teachers to draw upon geography as a discipline, to inform decisions when balancing student experiences, pedagogical choices and geography as a school subject.

The intention of the survey was to obtain a more nuanced picture of mentoring in geography education, and the data we gathered was structured around three questions:

- Who are geography mentors (and who do they mentor)?
- What is geography mentors' current practice (and why)?
- What development and progression opportunities would geography mentors like (and why)?

Our findings suggest that drawing on the discipline of geography and the notion of 'educative mentoring' (Langdon and Ward, 2015) could support mentors and mentees and improve mentors' professional development – professionalism is a much debated concept in education and there is not the space to examine these ideas here.

# Who are geography mentors, and who do they mentor?

To answer this question we examined the academic and professional backgrounds of geography mentors. These are pertinent concerns, as teacher education moves away from academic disciplines – what Bernstein (2000) terms 'reservoirs' of knowledge – and becomes increasingly schoolbased (DfE, 2017). We also drew on the mentees' backgrounds, both the phase and the programme they are training to teach in.

Of the 87 mentors who responded, 77 % had an undergraduate degree in the discipline, with a further 18 % holding Masters level qualifications. Almost all were qualified teachers, with 95 % holding a PGCE or equivalent qualification. Drawing on Brooks' (2016) work on subject identity in geography teachers, we assert that when subject mentoring is strong, mentors draw on their discipline to support the mentee in both curriculum making, and in navigating the complexities of school and classroom life. In short, they support the mentee in drawing on the 'reservoirs' of knowledge that are geography and education, to develop their 'repertoires' of practice as a geography teacher (Bernstein, 2000).

42% had been teaching for ten or more years and 9% for less than two years. Tapsfield (2019), in the context of early career teachers and ITE, defines mentoring as 'when an experienced teacher helps to train new geography teachers for the profession' (p. 3). It is difficult to pinpoint when a teacher is experienced enough to be a school-based mentor, but these varied levels of teaching experience suggest that decisions about when a teacher is ready to mentor are likely be subjective and context-specific.

We asked mentors to indicate which teacher education programmes they worked with. Figure 1 shows the percentage of mentors working in each route into teaching. Most were based in the secondary phase, and none in the primary phase.



Over 60% of respondents worked with PGCE students, so our respondents did not reflect national trends in ITE: 47% of trainee teachers choose a university-led route into teaching (DfE, 2017). Furthermore, a third of mentors worked with two or more teacher education programmes. This may reflect the increasingly diverse landscape of teacher education, with more routes into teaching than ever before, and may also be representative of the current issues in recruitment and retention of geography teachers in England (Tapsfield, 2015; 2018; DfE, 2018).

#### Maria Palombo, Lauren Hammond and David Mitchell

Maria, Lauren and David report on the findings of the mentoring survey launched in the Spring 2019 issue.



Figure 1: Programme and phase that mentors work in.

## What is geography mentors' current practice, and why?

The survey found that the most frequent mentoring activity was evaluating and feeding back on teaching, and critiquing classroom practice (Figure 2). To enrich the survey data, mentors were able to offer qualitative comments and rationales. One mentor who works with a universityled PGCE programme, referring to their mentee's progress, offered an insight into their philosophy:

We run a continual process – lesson planning, observation and reflection – which are done daily rather than weekly. This enables us to make sustained progress.

During our analysis of the data we examined the differences in mentoring practices between routes into teaching, and one trend we identified is that mentors working on the Teach First programme did not evaluate and feedback on lessons as frequently as those on other routes. The most frequent Teach First mentoring practice was developing student teachers' lesson aims and objectives. This may be due to the differences in their teacher training model: after a six-week 'summer institute' Teach

Figure 2: Survey responses on mentor practices.



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First trainees have a reduced teaching allocation, and are expected to teach in their classrooms alone. In contrast, on a university-led PGCE programme, the school-based mentor usually remains in the classroom with the mentee, which offers more opportunities for observation, evaluation and feedback on the mentee's teaching.

All correspondents cited supporting teachers to become reflective practitioners, engaging in coaching conversations and providing general pedagogical advice as frequent mentoring activities. Tapsfield (2019) highlights the importance to geography student teachers of becoming a reflective practitioner, so it is encouraging that many of the geography mentors recognise this and incorporate it into their practice.

The least frequent activity was encouraging the mentee to engage with the subject community and/ or subject associations, with only 32 % of mentors doing this once a week. This is a significant omission, as engagement with the subject community can offer professional development opportunities for both mentor and mentee. For example, through conferences and special interest groups, which often draw upon, and/or contribute to, geography education as a 'reservoir' of knowledge.

Only three respondents commented on the benefit of mentoring for themselves, with one respondent stating 'I learn so much from trainees'. This can be interpreted as an educative approach to mentoring, which regards '... teachers and learners and the classroom as a site of inquiry' (Langdon and Ward, 2015, p. 243). In educative mentoring the mentor and mentee are collaborative enquirers who can learn from each other, drawing upon the 'reservoir' of geography education knowledge when trying to resolve issues and develop their practice.

# What development and progression opportunities would geography mentors like, and why?

64% of mentors reported that they had attended generic mentor training, with only 30% expressing that they had attended geography specific training. A worrying 6% reported receiving no training at all. Analysis of the responses about the content of mentor training showed a frequent focus on paperwork, details of the course structure, and consideration of the role of the mentor. 8% of mentors reported that mentor training had offered support and/ or an opportunity to discuss issues that might arise when mentoring (e.g. having a difficult conversation about student progress). However, very few mentors referred to any geographyspecific training in their qualitative responses.

Mentor training in teacher education is often focused on technical and managerial elements, with limited opportunities to consider the role and value of the subject. However, our respondents would most value subject-specific input to support their development as geography mentors and teachers (Figure 3): 63 % selected conferences related to their geography and 65 % selected the development of local geography mentor networks. In support of your role as a geography mentor, please rate the following examples of support, training and development from most valuable to not valuable at all.



#### Conclusions

The role of the mentor is critically important to teacher education and is increasingly recognised as such in government policy. It is also a significant professional development opportunity for the mentor. By drawing on both the discipline of geography and the field of education, mentor development can be re-framed as 'educative geography mentoring' to support beginning and early career teachers.

While mentors are generally subject specialists, they have varied levels of experience as teachers. In addition, although mentors would like further training and development focussed on geography, teaching geography and mentoring in geography, current training does not reflect these aspirations.

The number of different routes into teaching accounts for an increasingly diverse mentoring landscape, and may also reflect current recruitment and retention issues.

Affirming Brooks' (2016) work on subject identity in geography teaching, our survey found that when subject mentoring is strong, mentors draw on their discipline – the 'reservoirs' of knowledge that are geography and education – to help the mentee develop their 'repertoires' of practice as a geography teacher (Bernstein, 2000). | **TG** 

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#### Online resources

A larger version of Figure 2 is available to download. Go to www. geography.org.uk/ Journals/Teachinggeography and select Spring 2020.

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#### Richard Bustin

# From the archive: Christaller's central place theory

Richard delves into the Geographical Association journal archive to reappraise Christaller's work two decades after it practically disappeared from geography classrooms.



Figure 1: Walter Christaller, 1893–1969.



The 'central place theory' (CPT) developed by Walter Christaller (1933) was once hailed as 'geography's finest intellectual product' (Bunge, 1966, p. 133), and was a key feature of many A level geography courses right up until the end of the last century. Yet students of today, and many young teachers entering the profession, have never heard of it.

#### Central place theory (CPT)

The theory itself was developed by Christaller in 1933, based on his observations of settlement patterns in rural southern Germany. The models he developed (Figure 2) show a theoretical relationship between settlements across a region. Each of these settlements acts as a 'central place,' providing goods and services for surrounding populations. Christaller argues that central places have a hexagonal 'market area', whose populations are served by their nearest central place. Some central places develop into larger towns and cities with a larger market area and hence a larger hexagon; others remain small. A settlement pattern develops:

- many small central places, with small market areas, selling mainly low order goods (everyday items such as milk and newspapers)
- a smaller number of middle-sized settlements serving the needs of a larger population and offering a wider range of services
- large towns and cities providing middleand high-order goods and services (such as furniture shops and theatres) to a larger population.

Wherever anyone lives within an area they will have access to a range of settlements of varying sizes. The first of his models ((a) in Figure 2) shows the basic pattern, based purely on mathematical or 'marketing' principles, reducing travel time for the population. Variations of his model took into account transport routes (b). in which larger central places are located on routes between smaller places; and administrative needs (c) in which one central place wholly serves neighbouring areas. Christaller's work was key in developing the understanding of geographical concepts such as settlement hierarchies (the ranking of settlements according to size), range of goods (the maximum distance someone is prepared to travel to obtain a particular service) and threshold populations (the minimum number of people required to support a particular service).

In 1966 an English translation of Christaller's work came out and a review was published in *Geography* the same year (M.C., 1966).



Figure 2: Christaller's central place theory based on (a) marketing principle; (b) transport principle; (c) administrative principle.

Spring 2020 © **Teaching Geography**  CPT was influential in school geography through the 1960s when the subject was mirroring the university discipline and moving away from a simple regional descriptive approach 'to involve the use of theoretical models, conceptual frameworks and quantitative techniques ... (which) shifted the emphasis ... towards the search for repeating patterns and processes' (Boardman and McPartland, 1993a, pp. 67-8). As Wolforth (1976) argued, 'models ... provided a framework for the design of syllabuses. Perhaps for the first time geography was seen to have a distinctive structure' (p. 143). The simplicity of these structures was seen to be 'readily acceptable to children' (Maund and Jenkins, 1970, p. 434). Yet like many of the descriptive models of the world developed at that time, CPT had its shortcomings. It did not take into account individual decision-making about consumption choices and assumed people would go to their nearest central place; it assumed settlements developed on a flat isotropic plain and so it did not really 'fit' the real world. Recalling his own experiences of studying A level geography in 1978, Percival (2013) recalls:

... the human geography was very much based on patterns of settlement, and the theories ... and was not particularly interesting or inspiring. Possibly I was too young and immature to really engage with theoretical models; they all seemed to lack relevance and explanatory power. As I recall, virtually no real pattern of settlement ever matched the theoretical models, so it was hard to get too enthusiastic about them! (p. 30)

CPT was influential in its time, spawning a range of other research published in GA journals, in such fields as economic geography (e.g. Beavon and Hay, 1978; Bird, 1973), markets in developing countries (e.g. Bromley, 1971) and urbanisation (e.g. Potter, 1995).

The development of post-industrial cities, out-oftown retail centres, the development of internet shopping and the growth of globalisation rendered traditional settlement patterns, and thus these models, unrepresentative of a changing world. By the 1970s academic geographers were developing new approaches to making sense of the world which focussed much more on human choice and experiences of place. As Morgan (2003) explained, 'the search for "relevance" in geography meant that topics like crime, health and hunger were added to the research agenda' (p. 125). The development of behaviourist and humanist approaches to the subject identified the role that people played in consumption choices; postmodern approaches to the subject in the 1990s and beyond even rejected the very existence of models, rules and order as a means of explaining the world.

Teachers themselves were beginning to question the validity of models, as Boardman and McPartland (1993b) recalled of the 1970s:

Reservations continued to be expressed about the wholescale adoption of models, theories and quantitative techniques in school geography courses. Some teachers felt that the study of human and physical environments was being reduced to mere exemplars of models and theories (p. 118).

The pages of *Teaching Geography* chart the changing attitudes towards the geography curriculum, away from the sorts of ideas typified by CPT. Marsden (1988) argued for a welfare approach to the subject and Mack (2004) even proclaimed 'move over Christaller – funky geography is in' (p. 69) in reference to a more student-centred, contemporary approach to the teaching of geography in schools.

Yet still CPT endured in classrooms, being taught in schools as part of settlement studies in A level courses throughout the latter part of the twentieth century. The geography taught in schools and the geography being developed in the academic discipline were very different (as observed by Goudie, 1993), a situation only really addressed in the curricular reforms of the late 2010s. CPT has only been outlasted in schools by the equally old and irrelevant model of cities developed by Burgess, which still seems to linger on in textbooks and classrooms today, an issue raised in a recent *Teaching Geography* article by Charles Rawding (2019), with a response in this issue (Puttick, 2020).

#### Christaller and Nazi spatial theory

An often overlooked aspect of Christaller's work is the impact it had on Nazi thinking during the Second World War. Christaller himself worked as a geographer for the Nazi Party, and his central place theory became the blueprint for planning settlements in Nazi-occupied Europe. As Barnes and Minca (2012) explain:

Christaller's task was to reconfigure the internal geography of Germany's newly acquired territories. His particular charge was Poland, invaded by Germany in September 1939 ... Christaller brought his own geographical imaginary to the task, a curious mixture of spatial geometrical formalism and place-based rural romanticism ... it was a geography that perfectly fitted the Nazi ideological agenda (p. 2).

Christaller's proposal for settlement distribution in northern Poland in 1941, originally published in Rossler (1990) and reappearing in Machon and Lambert (2005), is shown in Figure 3. The circles show the various central places, with the varying sizes denoting the relative importance of each. It was part of a much broader range of changes to the landscape identified as 'germanification' by Machon and Lambert (2005). The end of the war and liberation of the occupied territories by Allied forces ensured this vision never became a reality. Far from just being a model to help explain settlement geography, CPT has a relevance and legacy steeped in historical significance.

The links between the theoretical model that Christaller developed, and the role it played in Nazi ideology in the Second World War, seem to have been conveniently forgotten by many in the post-war geography academic community.



The same is true for its teaching in schools; as Machon and Lambert (2005) remarked: 'CPT is still taught widely in British school geography, though rarely with any reference to its origins' (p. 128). Yet it is precisely this view of the theory that invests the model with a relevance beyond a simple set of hexagons and circles. Percival's (2013) recollections of learning about boring theoretical models in geography lessons relate to a time when modelling attempted to simplify and sanitise the world. The context of its Nazi history would have invigorated the teaching of CPT with terrifying relevance and ensured engagement in the classroom.

#### Conclusion

In his lifetime, Walter Christaller received many plaudits and awards for his work, including the prestigious Victoria Medal from the Royal Geographical Society in 1968. Yet his links to the Nazi Party seem to have been omitted from official histories. His Wikipedia entry proclaims 'he was never a Nazi', yet several academic accounts of his life suggest the opposite, with Barnes and Minca (2012) asserting that he joined the Nazi Party on 1 July 1940. Since his death geographers seem better able to reappraise his life and legacy, and his part in one of the darkest periods of European history.

CPT has an important place in the development of twentieth-century geographical thinking, and without it many contemporary developments in the subject would not have occurred. As a simple model to explain the modern world, its place in the classroom has passed. But it does have a renewed relevance in how geographical thinking can contribute to powerful ideologies; and how geography can be linked to historical discourse in a tangible way. | **TG** 

# Figure 3: The plan for the application of CPT to Nazioccupied northern Poland, from 1941. **Source:** Rossler, 1990, reprinted in Machon and Lambert, 2005.

#### Online resources

A larger version of Figure 3 is available to download. Go to www.geography.org.uk/ Journals/Teachinggeography and select Spring 2020.

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# Interweaving geography: retrieval, spacing and interleaving in the geography curriculum

#### Retrieval, spacing and interleaving

The advantages of *retrieval practice* in the classroom setting are well established. Since Ebbinghaus, writing in the nineteenth century (Ebbinghaus, 1885), we have been aware that interrupting the process of forgetting helps to make memories more durable; every time we bring something back from our long-term memory into our working memory, we make it easier to retrieve in the future.

A related concept is that of *spaced practice*. This is the idea that we can secure the advantages of retrieval practice by returning to things we have studied at regular intervals and breaking up the study of a topic over time rather than studying it in a block (*massed practice*). Spaced and retrieval practice can have a powerful impact on students' ability to recall what was taught in geography lessons and use it in different scenarios. In an experiment by Roediger and Karpicke (2006) students were split into three groups, all of whom were studying the same information over four sessions:

- The first group studied the information in all four sessions.
- The second studied the information for three of the sessions; in the final session they tried to recall as much as they could.
- The third group only studied the information in the first session. In the next three sessions they tried to recall as much as they could.

Despite only having been introduced to the tested material once, the third group performed significantly better in the test. The first group, who hadn't used retrieval practice at all, performed the least well. Karpicke and Grimaldi (2012) point out that retrieval, usually practised through low-stakes quizzes of previously taught material, results not only in the ability to reproduce the tested answer by rote, but also in *meaningful learning*, which they define as:

... the ability to use past experiences in the service of the present. If a person has learned something, it means they are capable of using information available in a particular context, referred to as retrieval cues, to reconstruct knowledge in order to meet the demands of the present activity (p. 401).

This definition of meaningful learning, the ability to apply what you know to new scenarios, is fundamental to geography: known models are tested or known case studies interrogated to draw out wider conclusions. We are not simply reproducing information but developing our geographical understanding: moving beyond the 'Trivial Pursuit view of geography' warned against by Peter Jackson (2006) while recognising the need to be knowledgeable about our world – in order, as he says, to think geographically.

Like many teachers, I have embraced retrieval practice in my classroom through the use of low-stakes quizzes at the start of lessons. I have found the most effective and efficient method to approach these is to put ten questions on a PowerPoint slide (with the questions drawn from previous topics as well as the one we are currently studying) and then putting the answers on the next one. Students can then quickly mark their own answers (helping to keep it low-stakes). I have also used spaced practice when setting homework tasks and often set activities requiring students to answer questions about topics they have previously studied, rather than on work they have just done.

Over time, though, I have become increasingly interested in the way retrieval and spaced practice could become embedded into geography curriculum design rather than left as a relatively *ad hoc* bolt-on. I have seen an approach to this, termed *interleaving* by the teachers concerned, which involves teaching geographical topics non-sequentially: this might mean tectonics on Monday, urbanisation issues on Wednesday and river processes on Thursday, before returning to tectonics the following Monday. However, I see several problems with this approach.

#### Mark Enser

Mark describes how he has used retrieval, spacing and interleaving approaches to support meaningful learning in geography.



Figure 1: Making learning meaningful through retrieval and spaced practice. Photo: © Geographical Association.

Firstly, students aren't necessarily taking advantage of retrieval practice as they may be introduced to something entirely new about each of these topics, not revisiting the things they learnt the week before. Secondly, if we are referring back to things studied in the previous week, the spacing is likely to be too far apart to support optimal learning. Ebbinghaus's early research suggests that forgetting is too rapid to allow long gaps between retrieval opportunities. Finally, although there is a lot of research on the benefits on interleaving, this isn't what the term refers to. Interleaving, as described by Firth (2018), refers to the studying of related, or easily confused, content, side by side rather than separated into different sessions. As such, we might study two contrasting case studies of responses to a tectonic hazard in the same lesson to help draw out the differences between the responses in each case. There is no evidence that interleaving largely unrelated material (such as tectonics and urban challenges) leads to any particular benefits.

#### Interweaving

It was while reading Alex Standish's chapter on 'The place of regional geography' in *Debates in Secondary Geography* (2018) that it occurred to me there was a more natural way to accrue the benefits of retrieval and spaced practice in the curriculum: through the *interweaving* of regional and systematic geography. He distinguishes these approaches thus:

Systematic geography focuses on one geographical phenomenon or 'layer' of the earth's surface at a time and explores how it varies with respect to other geographical layers. Regional geography examines the totality of geographical phenomena or layers, and how they are related, at a given locale or region. (Standish, 2018, p. 68)

The 2014 National Curriculum has restored a focus on regional geography, requiring students to:

... extend their locational knowledge and deepen their spatial awareness of the world's countries using maps of the world to focus on Africa, Russia, Asia (including China and India), and the Middle East, focusing on their environmental regions, including polar and hot deserts, key physical and human characteristics, countries and major cities (Department for Education, 2013, p. 2).

The approach we have taken in our department is to weave in strands of previously studied systematic geography into the study of these regions. This gives students opportunities to retrieve information and to apply it in new situations leading to meaningful learning. Our aim is not only to make what they learn more durable, but also to move from a culture of doing (where topics are studied in isolation, rarely to be referred to again until it revision time) to a culture of learning, where students build up the 'big picture' of geography and see the synoptic links that underpin what can seem a disparate list of topics.

#### An example of interweaving – year 8

Students start the year with tectonic processes. They study plate movement, apply this to different forms of volcano and look at why different volcanic eruptions have different impacts.

This tectonic thread emerges again in the next topic, a regional study of East Africa. Here they look at the Great Rift Valley in terms of its formation and impact on the people who live there. They contrast this to their previous studies of the experience of people in Iceland. In this regional study they also pick up the threads of development studies from year 7, in particular their work contrasting the UK and Uganda, and the thread on world climate and biomes. They begin to look at how these elements interact in this region.

The tectonic thread continues into the next unit, looking at the formation of distinctive landforms. It informs their understanding of how our local landscape, the Wealden Anticline, formed.

Their final topic of the year is a regional study of the island of Haiti, with the aim of understanding why this is the most underdeveloped country in the western hemisphere (World Bank, 2019). This topic draws together the various threads they have studied over the past two years. They consider the role of tectonic activity, as well as that of tropical storms, on development. The threads on development come together with a particular focus on trade and globalisation.

This approach has allowed us to show our students that geography is a distinct discipline where different elements of the subject are studied for a purpose. They now know that what they study in one lesson will be important for what comes later and that there is an expectation that they remember it so that they can apply it again.

For us as teachers it has meant that we can plan for these links much more explicitly. While the naturally synoptic nature of our subject means the threads were always there, we can now plan to take advantage of them. We do this by ensuring that quizzes pick on the aspects of previous topics that are most relevant to what will be studied next (such as quizzing about Iceland before studying the Great Rift Valley) and by setting homework that doesn't only ask them about previous topics but which asks them to tie some of the threads together (such as explaining how tectonic processes have shaped the south east of England).

#### An example of interweaving – GCSE

We have also begun to use a similar approach at GCSE. When we introduced the 2016 specification (AQA) we taught Urban Challenges as one large unit in year 10 and then Economic World as another large unit in year 11. Now, we teach the UK's Changing Economy in year 10 and follow this by looking at the urban challenges faced in London in light of these changes. Students make much more meaningful connections between the topics and start to think synoptically about the subject. Likewise, in year 11 we study Nigeria's changing economic fortunes and their implications before looking at this in the context of the challenges facing Lagos. As we do this we draw explicit parallels with the UK and London studied a year before.

Our next step at GCSE is to see if we can weave in other aspects of the course through these places. Can we find examples of water management issues in London and Nigeria that will help students reflect on what they have learnt in these topics? Can we spend more time considering the implications of climate change in these places? In this way I hope to draw further on Jackson's idea of thinking geographically and his key concepts, in particular his relational thinking (pp. 200-201), something we are unlikely to achieve without the interleaving of different places and ideas.

#### Conclusion

There has always been a risk of the geography curriculum acting like a series of silos of information. Students do a topic, placed in a seemingly random order, and then move on to the next one. By interweaving systematic threads into regional studies we can overcome this while at the same time benefitting from the advantages of retrieval and spaced practice to create meaningful learning. | **TG** 

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#### Simon Oakes

Simon outlines different approaches to teaching 'Changing places' and encourages teachers to provide opportunities for their students to write about the places that matter to them.



Accompanying online materials

# Place meaning – opportunities and challenges for A level curriculum making

In 2016, the topic of place meaning (and representation) was introduced to A level geography as part of 'Changing places', creating new opportunities for student-led and interdisciplinary learning. But it also introduced curriculum-making challenges for teachers. This article reflects on the subsequent involvement/experiences of students, teachers, textbook authors, subject associations and examiners. On balance, can we celebrate place meaning curriculum making as a classroom success story, showcasing geography at its best?

#### The A level reforms of 2014–16

The publication of the Department for Education's (DFE, 2014) content guidelines for A level geography, based on the recommendations of an advisory board of higher education geographers, was a watershed moment for the geography curriculum. Notably, the 'Changing places' topic was introduced as part of a new core framework, requiring all future A level students to think critically about (among other things) place meaning and representation. A strong steer was given that learning might make greater use of qualitative artefacts – including art, poetry and photography – than most teachers were used to.

The advisory board stressed that students should understand how their own lives are affected by the forces they learn about in A level geography; that they should critically explore how they have been influenced by different place meanings and representations. An important underlying assumption is that students are more likely to comprehend the power of geographical concepts and ideas when they see how their own lives have been shaped by these things (Roberts, 2013). By reflecting on how their own social attitudes, life chances and very identities have been shaped by everyday place attachments, students may arrive at a deeper understanding of why place meaning really matters.

### How the A level specifications 'translated' the DfE guidelines

Ultimately, the DfE directive was translated into four specifications jostling for market share. The following statements (emphasis added) briefly characterise the prescribed content that current A level cohorts must study to satisfy the requirement that they understand place meaning and representation:

- 'Contrasting images ... of places ... the way in which these meanings and attachments *affect learners' own lives'* (WJEC Eduqas).
- 'Characteristics of *your* chosen places ... *How the lives of students* ... are affected by this' (Edexcel).

- 'How informal representations of a place differ through contrasting media such as TV, film, music ...' (OCR).
- 'The importance of the meanings and representations attached to places by people with a particular focus on people's *lived experience* of place ... How places may be represented in a variety of different forms' (AQA).

#### Uncharted territory

This 'top-down' prescription of place meaning and representation as a compulsory A level topic might be characterised as a curriculum disruption, insofar as there was no antecedent in legacy human geography courses. It was, to all intents and purposes, a brand-new topic requiring curriculum-making from scratch. Opportunities to 'reheat' old lessons in the department microwave were not available.

## The co-construction of the place meaning curriculum

In the remainder of this article I want to briefly explore the co-construction of a curriculum by an actor network comprising teachers, students, awarding bodies, subject associations and textbook authors. As lead actors, teachers decide the answers to important questions:

- What are we trying to achieve?
- Which places are included in and excluded from the geography we teach?
- Who decides which places are studied and which are left out? (Biddulph, 2010).

To try to answer these questions I present the results of a survey focused on how far teachers have been able to accommodate young people's personal geographies in their A level classrooms.

Figure 1 models some of the actors and forces at play in place meaning curriculum making. The process can be envisaged as an educational actor network (Carroll, 2018; Fenwick and Edwards, 2010) which negotiates place meanings. These negotiations are framed by the lived geographical contexts the actors inhabit; media representations of studied places; and regulatory frameworks (informed by advisory board recommendations). There are also non-human actors (computers. phones and smart classrooms): humantechnology interaction has transformed the way students experience school geography. Google's popularity algorithms and artificial intelligence (AI) undoubtedly help determine which images and stories of places are 'discovered' online and subsequently beamed into classrooms.

Platforms like YouTube or BBC iPlayer also exert important influence over which places are studied and which are left out.

#### Students' personal geographies

The GA and RGS (with IBG) have drawn attention to the personal dimension of places and place meanings:

- In a 'getting started' guide for teaching the 'Changing places', topic Phillips (2016) asserts that: 'Place has been defined as location + meaning ... Places can be meaningful to individuals in ways that are *personal* or subjective' (emphasis added).
- The GA manifesto A Different View (2009) lobbied for: 'A young people's geography curriculum characterised by ... young people's everyday experiences, as reported by themselves ... we want students to realise that geography can be about them.' Elsewhere, the GA's 'Curriculum making glossary' champions a vision of school geography which is drawn from young people's 'lived' or 'everyday' geographies. The same document reminds us that: 'Pupils carry with them mental images of places ... the world, the country in which they live, the street next door. These form part of their geographical imagination' (GA, 2019; emphasis added).

By year 12, students will have typically accumulated a decent-sized store of lived experiences, including meanings drawn from the everyday places they frequent. As an illustration, one such everyday place for many young Londoners is the Stratford Westfield shopping centre – a semantically rich environment where adverts for smart phones and messages about terrorism compete for attention (Figure 2).

Students can also draw on prior knowledge of place meaning and representation from the entire length and breadth of their present and past school curriculum. Some of today's A level geography students will have studied the Grace Nichols poem 'Hurricane Hits England' (BBC English File, 2012) in GCSE English, for instance. It explores how a range of complex physical and personal feelings and connections help link together England and the poet's native Caribbean (where the 1987 hurricane originated).

Finally, today's A level learners are, of course, digital natives: theirs is a densely networked and shrunken world. Some are well-travelled; many are avid consumers of online media streamed from the bedrooms and hometowns of 'influencers' and celebrities. Others may belong to a diaspora and use the internet to maintain personal links with communities in distant continents; they may therefore take great personal interest in how those places are represented in different media, both positively and negatively.

### The agency and capital of textbook authors and publishers

The personal geographies of year 12 students may remain an untapped resource, however, due to the disproportionate influence of textbook writers over the way geographical understandings





#### Non-human actors: computers and classrooms

Figure 1: Place-meaning curriculum making: actors and influences.



are contextualised. Students will use an author's 'situated knowledge' (Haraway, 1988) as a 'springboard to help them understand place meaning, and why meaning matters. Textbook authors therefore occupy a privileged position when they translate personal experience into one which becomes shared with successive cohorts of A level students.

Emma Rawlings Smith (2017, 2019) has explored the decisional capital and author agency embedded in textbooks. She views writers as 'knowers with agency' who re-contextualise their own knowledge to support learners' understandings. Her research shows textbook writers selecting case studies based on their own convictions of what constitutes 'significant' or 'interesting' contexts for others to study. I can recollect my own past decisions about 'which places are studied and which are left out'. Many of the case studies and detailed examples I write about in *Changing Places* (Oakes, 2018) draw on my own life story. There are frequent references to

Figure 2: Westfield Shopping Centre, Stratford: an 'everyday place' for East London A level geography students. Photo: © Simon Oakes

Hebden Bridge (my father's home place), Formby (where I grew up), the island of Arran (a preferred holiday destination) and Balham (a South London neighbourhood transformed by gentrification during my years there). I also wrote about the Glastonbury Festival, partly because of its conceptual richness (planetary-scale connectivity achieved through ephemeral reimaging) but also on account of my, perhaps, ethnocentric imagining that young people will think this study is relevant to them. Teachers must decide if it is a good thing for A level students to explore place meaning through any textbook's particular prism.

#### Teachers and their view of external assessors

This final section analyses the curriculum-making role of teachers while preparing students for external assessment, thus completing the tour of Figure 1 actors. In February 2019, I conducted an online survey of teachers which focused on teaching and learning about place meaning and representation.

- I contacted users of the A level geography Facebook groups serving AQA, Edexcel, WJEC-Eduqas and OCR teachers (this was a selfselecting sample, thus the usual caveat applies – the views expressed are not representative of the teaching community as a whole). In total, 102 teachers responded.
- Only four respondents had been teaching for three or fewer years; typical class sizes varied from four to 30; the modal interval was 10–15 students per class. Over half (67 respondents) identified themselves as 'the main writer' of their school's 'Changing places' scheme of work (a further 20 had 'contributed a lot').
- The vast majority had no experience of teaching place meaning and representation prior to 2016. Moreover, most (63%) had no experience of studying the topic at university

   the implications of which go far beyond the scope of this article!

In the survey results (Figure 3) note how:

- In the first year of study, almost all teachers used examples from course books and wider reading as the main way of selecting case studies for students. Only 2% encouraged students to develop their own examples – an unsurprising outcome when a shortfall in professional knowledge comes up against a short lead-in time for first teaching.
- During subsequent academic years, the percentage of teachers fostering student-led learning rose to 12 % while a further 35 % had gained sufficient confidence to lean less heavily on bespoke course textbooks.
- Teachers most commonly select case studies they 'can deliver confidently' or think 'students will be very interested to hear about'. Only 1 % make use of cross-curricular materials such as poems studied in English.

The greatest expressed concern about giving students freedom to develop their own case studies of place meaning was the fear that resulting materials would be of poor quality,

or not 'proper geography'. Another significant worry was the risk that external assessors might undervalue unfamiliar examples of place meaning drawn from the everyday experiences of individual students. Students and teachers alike may believe it is 'safer' to use approved textbook contexts in public examinations. This perception arises because of a feedback loop: when large numbers of candidates use a textbook example of, say, Detroit, examiner reports are more likely to include exemplars of high-scoring student work based on Detroit. The knock-on effect is more teachers and students adopting the Detroit example because of its proven association with 'exam success'. Social media interactions among teachers play an increasingly important part in this process, echoing my earlier observations about the agency of technology in contemporary curriculum-making.

#### Conclusions

I believe that geographical knowledge cannot simply be delivered to students ... This involves connecting new information and ideas with what they already know and understand ... as each individual brings to the classroom different direct and indirect experiences. (Roberts, 2010)

I would encourage all teachers to provide classroom opportunities – even if relatively limited – for students to write about the place meanings that matter to them and affect their own lives, because it is true to the original spirit of the 2016 A level curriculum. If learners are to understand that place meanings really do matter then it is no bad thing for them to synthesise information from their own personal experiences of place alongside whatever contexts their textbooks and teachers want to talk about. The survey results suggest confidence among teachers has already grown in this respect, allowing more A level students to actively participate in the co-construction of classroom knowledge about place meanings.

Along the way, this article has touched on several important broader issues too:

- many teachers' initial (and in some case persistent) lack of confidence in teaching 'Changing places'
- the agency of non-human forces in relation to curriculum making (how Google's AI helps decide which places matter and which do not)
- the privileged position of textbook authors as gatekeepers of contextual knowledge
- a risk that external assessment processes may, over time, begin to filter out – rather than foster – the inclusion of unexpected personal geographies and perspectives.

The GA, through training courses, the Annual Conference, local branch activities and articles in both this journal and *Geography*, courses and materials from the RGS (with IBG) and examination reports from awarding bodies, all attempt to help teachers address some of the issues raised here, and all of which are worthy of further investigation. | **TG** 



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Figure 3: Selected comments, on whether students might have greater freedom and encouragement to write about their personal 'everyday' experiences of place meanings, from the A level teacher survey.

#### Online resources

A larger version of Figure 3 is available to download. Go to www.geography.org.uk/ Journals/Teachinggeography and select Spring 2020.

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#### This article summarises and analyses key points from the 2019 Examiners' Reports to help improve student performance at GCSE.

# Using the Examiners' Reports from GCSE 2019 to improve future performance

The Examiners' Reports produced by the Awarding Bodies (ABs) for each of the GCSE papers highlight the strengths and weaknesses markers observed and suggest ways teachers can improve the future performance of their students. Teachers can also compare the performance of their cohort with the entire cohort for that specification (e.g. via Results Plus for Edexcel, OCR Hub, e-AQA); this information, together with the Examiners' Reports, enables teachers to assess whether the issues highlighted in the reports apply to their students. In addition, the ABs make available on their websites samples of students' work with commentary (see 'References and further reading' at the end of this article for links).

#### Overview

The reports contain a wealth of detail, which we would encourage teachers to read for themselves. All reports in 2019 reflected this comment from 2018:

The examination appeared to be appropriate for the ability range of students and achieved widespread differentiation ... through a broad spectrum of multiple choice questions, source material stimulus questions and extended writing tasks to assess descriptive, explanatory and higher order evaluative skills. (AQA, 2018)



However, although in 2019 AQA commented that '... it was pleasing to see that centres and students had used some of the feedback from the last series in order to develop their examination skills in readiness for this year', a number of areas for improvement emerged across all specifications:

- appropriate use of geographical terms
- understanding and responding appropriately to command words
- literary skills, in extended writing responses, including spelling, punctuation and grammar (SPaG)
- use of mathematical skills
- responses to fieldwork-based questions.

Generally, candidates also needed to be guided by the mark allocation; some produced overlong answers for short tariff questions and spent too little time on the higher tariff questions.

## Geographical terminology and command words

ABs are using more demanding terminology, and students struggled with this – not just the geographical vocabulary, but also the overall readability of the examination papers and prerelease material. Some ABs tried to ensure that students were not unduly disadvantaged by not knowing a term, but the level varied significantly: 'It is important that terms such as 'distribution' are taught in a way which will allow candidates to use their understanding to 'un-pick' the questions' (Edexcel A, 2019).

What is very clear is that some students struggled to understand and respond to the command words and phrases in the higher tariff questions, e.g. 'to what extent', 'assess' and 'evaluate' – the commonest weaknesses in 2018. In 2019, however, students were better prepared; this '... was particularly evident in some of the 8-mark questions where candidates were better able to address the command words (e.g. "assess"). However, the greater emphasis on application and interpretation is still proving a challenge for some candidates' (Edexcel A, 2019).

Centres should spend time reviewing the specimen and live papers to ensure that they are familiar with key vocabulary which is being used in the questions – both in terms of key geographical terms (e.g. river discharge and biodiversity) and words which provide the "slant" to the question (e.g. characteristics, distribution or frequency) (Edexcel A, 2019).

Figure 1: Schools used the feedback from 2018 to develop students' skills for the 2019 exams. **Photo:** © Geographical Association. Best practice in preparing for linear exams suggests interleaving exam practice throughout the teaching of the GCSE; this will reinforce a greater understanding of command words such as "justify", or ... "to what extent" (OCRB, 2019).

#### Extended writing

Higher tariff questions (6–9 marks) often have additional marks allocated (up to a maximum of three) for spelling, grammar and punctuation. For example Question 1 (The Challenge of Natural Hazards) was worth 12 out of 33 marks on Paper 1 'Living with the physical environment' (AQA, 2018). Higher tariff questions associated with the commands 'assess' or 'evaluate' are seen as more challenging and therefore an opportunity to distinguish between candidates.

In extended writing marks are awarded not for the number of factually accurate points made but for the way the argument is developed and concluded. Examiners' reports include the following suggestions for improving extended answers:

- 'An often-overlooked area is the need to try to make on-going evaluation or assessment supported with evidence (AO3)' (AQA, 2019).
- '... candidates need to be more aware of the need to achieve balance in their responses and discuss both points of view, even if they have strong feelings for one particular side' (Eduqas B, 2018).
- When explaining why one factor is more important than another, students should '... practise different long-answer structures focused on this, rather than writing in detail about one factor with no links to another'( OCR B, 2019).
- 'Inaccurate case study selection almost always limits candidate answers to Level 1' (Edexcel A, 2019).
- 'The use of paragraphs is one element which contributes to this mark [SPaG] and should be encouraged, as it helps to structure candidates' responses' (Edexcel A, 2019).
- 'A focus on literacy skills in teaching is important to support candidates in writing responses which are appropriately linked to the question. This applies to all questions but is particularly important in 6 and 8 markers where providing elaborated and sophisticated responses will gain access to the higher bands' (Eduqas A, 2019).
- 'Where candidates had developed a better understanding of command words, particularly in extended writing questions, their responses scored highly. Evidence of centres promoting effective writing skills through scaffolding and writing frames was evident, in high-scoring responses ideas were thoroughly developed and all aspects of the questions were addressed' (OCR B, 2019).
- A conclusion is essential, and should identify the most important factor. If they are asked to 'evaluate', students should draw together

the evidence they have discussed: '... while not requiring a final concluding paragraph, the command word "assess" does require judgements to be made' (Edexcel A, 2019).

• 'In terms of SPaG, most of the responses tended to be of an intermediate performance level. These were largely determined by the lack of paragraphs, limited sentence construction, key words spelt incorrectly and the lack of appropriate specialist geographical terminology used throughout the answers' (Edexcel A, 2018); poor performance in this important area continues to be an issue.

Extended writing questions often require candidates to draw on their own knowledge and understanding and apply this constructively to the question. To add to the challenge and complexity, candidates must sometimes analyse a resource to answer the question. Where a photographic stimulus is provided, students should aim to draw detailed inferences from the evidence in the photo.

#### Fieldwork

A common theme in examiners' reports about fieldwork questions is the need for candidates to be specific about the fieldwork they undertook, to understand all stages in the fieldwork enquiry process and employ the terminology associated with each stage. Overall, however, examiners' reports on fieldwork questions in 2019 tended to focus on errors and areas for improvement, rather than evidence of candidates' strengths.

#### Areas for improvement

'Fieldwork has improved since last year ... [but] of very significant concern ... [is] a small minority who had clearly not been on fieldwork' (OCR A, 2019). In a similar vein, some candidates needed to show clearly they were familiar with the environment in which they had carried out their fieldwork (Edexcel B, 2019); and to make specific references to their own fieldwork studies (Edexcel A, 2019), rather than offering generic answers which could relate to any fieldwork in any location (OCR B, 2019).

Candidates should identify the title of their fieldwork, and make specific links to the title in their response, rather than offering generic points which could apply to any context (AQA, 2019); teachers should ensure candidates are clear about why they are carrying out specific fieldwork tasks: 'Make sure that you know what you did and why you did it' (Edexcel B, 2019).

Candidates should be able to identify the different elements of the enquiry process in both a familiar and an unfamiliar context; teachers should use the model of the enquiry process to help candidates develop a deeper understanding of a geographical enquiry (Edexcel A, 2019).

Candidates should be clear about their question or hypothesis ('too many offered neither' (Edexcel B, 2019); be able to articulate how these had helped to focus their investigation, and apply them to their fieldwork practice, such as fieldwork collection methods: This question proved the most difficult for candidates, resulting in almost half of the cohort achieving zero marks ... Candidates who scored three marks made reference to the Bradshaw Model and clearly explained how they had used their question or hypothesis to focus their fieldwork collection methods (Edexcel A, 2019).

Candidates were not familiar with a range of challenging techniques in the specification (Eduqas B, 2018), including GIS, which 'did not seem to be widely understood' (OCR B, 2019); even, in some cases, with more basic skills such as annotation of photographs and map skills (OCR A, 2019).

#### Specific challenges

A second theme relates to the challenges experienced by candidates in particular aspects of fieldwork, such as:

 unfamiliarity with the most appropriate fieldwork methods, and knowing the difference between some key methods, including data collection vs. presentation (Eduqas B, 2019); quantitative vs. qualitative methods; understanding sampling methods and distinguishing between the reliability and the accuracy of conclusions (Edexcel A 2018, 2019): 'Candidates found this question challenging, often confusing stratified sampling with systematic sampling, resulting in over half of the cohort achieving zero marks' (Edexcel A, 2019).

Many examiners also highlighted the need to prepare candidates to respond to particular command words in fieldwork questions, especially those with higher tariffs. This included ensuring students were able to:

- go beyond description into explanation; for example, by adding details and linkages, using the language of cause and effect; or by developing their point to give a reason, or extending this further in a chain, to achieve three marks (Edexcel A, 2019)
- evaluate their fieldwork through all parts of the enquiry process; linking different strands of the fieldwork process for analysis and evaluation in the final question:

Useful practice for this type of question might be to offer a number of questions and, rather than ask candidates to complete them, ask them to identify what the question requires and construct a simple plan in order to address the identified demands. In this way candidates will not get side-tracked into spending too much time on one element of the question and consequently fail to address the whole question (AQA, 2019).

 to gain marks for AO3, assess the extent to which their conclusions had answered their enquiry questions and the relative success of the conclusions drawn (Edexcel A, 2019). 'Some candidates, when asked for "justification", included in their description of method "this allowed us to see/we could find out"; but very few developed their response beyond this point, so few gained full marks' (OCR B, 2019).

#### Mathematical skills

A common theme across ABs was the frequency of errors in basic mathematics and statistics skills, and they all recommended revising the skills listed in the specification:

- 'Schools and students should remember that 10% of the marks come from mathematical skills and therefore they should be able to perform these accurately' (AQA, 2019).
- 'There will always be a few questions that require candidates to perform a calculation (AO4). Therefore, it is essential that candidates have a calculator with them' (Edexcel A, 2018). This point was reiterated by many ABs in 2019; however, 'Candidates ... should be reminded of the importance of showing their working in order to attain the maximum marks' (Eduqas A, 2019).
- 'Centres must develop the accuracy of a candidate's writing in relation to describing data. Vocabulary linked to numeracy is an important factor in writing accurately about statistics or interpreting graphs ... Best practice might involve greater collaboration with the mathematics department or contributing to whole school initiatives looking at numeracy across the curriculum' (OCR B, 2019).

Students need to have a critical appreciation of the appropriate use of the various techniques so that they can evaluate the usefulness of various cartographic and mapping techniques.

#### Importance of curriculum design

Inevitably much of this analysis of the examiners' reports has focused on the terminal examinations: how to prepare students for the exam, and developing coping strategies for them. However, the reports do contain pointers for how you plan and teach the curriculum: '... when describing resources such as maps and graphs, candidates should make use of the information provided. Accurate reference to data, scale, compass directions will gain credit' (Edugas A, 2019); 'Rehearsing how to respond to statistical data, different types of graph and a range of maps at different scales is important prior to taking the exam (AQA, 2018, repeated in 2019); 'Teachers should practise using a variety of different graphs with candidates throughout the geography course' (Edexcel B, 2019).

However, practising for the exam should not take the place of designing a coherent GCSE geography curriculum. The curriculum should be planned at a strategic level to enable students to know geographical material, think like a geographer, study like a geographer and apply what they have learnt. In this curriculum experience, using geographical data is embedded and progressed in each unit of work, rather than rehearsed for the exam.

#### Conclusions

Student performance at GCSE is not just about knowledge; it is about the students' ability to apply a wide range of skills to the questions in

front of them. Recommendations for doing this successfully are laid out in the Examiners' Reports of the ABs. In the 2019 GCSE examinations it was evident that many centres had used the feedback from 2018 when preparing their students. Examples include:

- using the mark allocation to advise students how long to spend on a question and the depth of response it requires
- building experience of different question styles and answers into their lessons
- familiarising students with command words and key terminology, particularly the less familiar ones
- giving students opportunities to practise writing extended answers. These need to address the question, be structured in paragraphs, develop the key points, and reach a conclusion. It is not enough just to include lots factual knowledge
- ensuring students fully understand all stages of the fieldwork enquiry process and can evaluate each stage. They need to understand a wide range of fieldwork methods and be able to apply fieldwork methodology to new contexts
- ensuring lessons include opportunities for students to undertake mathematical calculations and practise graphical, statistical and cartographic techniques. | TG

#### References and further reading

All websites last accessed 18/11/2019.

AQA (2018) GCSE Geography Paper 1: Living with the physical environment, Report on the Examination. Available at https://filestore.aqa.org.uk/sample-papers-and-mark-schemes/2018/june/AQA-80351-WRE-JUN18.PDF

DfE (2014) *Geography GCSE subject content, Appendix, p. 10.* Available at https://assets.publishing.service.gov.uk/ government/uploads/system/uploads/attachment\_data/file/301253/GCSE\_geography.pdf

Examiners' reports and exemplar material for GCSE geography (9-1) are available as follows:

AQA: https://www.aqa.org.uk/subjects/geography/gcse/geography-8035/assessment-resources

Edexcel A: https://qualifications.pearson.com/en/qualifications/edexcel-gcses/geography-a-2016.coursematerials.

html#filterQuery=Pearson-UK:Category % 2FTeaching-and-learning-materials

 $\label{eq:excel} Edexcel B: https://qualifications.pearson.com/en/qualifications/edexcel-gcses/geography-b-2016.coursematerials.html \end{tabular} filter Quarty = category: Pearson-UK: Category \end{tabular} 2 FT aching-and-learning-materials \end{tabular} the tabular \end{ta$ 

Eduqas A: https://www.eduqas.co.uk/qualifications/geography/gcse-a/

Eduqas B: https://www.eduqas.co.uk/qualifications/geography/gcse-b/

OCR A: https://ocr.org.uk/qualifications/gcse/geography-a-geographical-themes-j383-from-2016/assessment/

 ${\sf OCR}\ B:\ https://ocr.org.uk/qualifications/gcse/geography-b-geography-for-enquiring-minds-j384-from-2016/assessment/displayed and the second se$ 

Student GCSE geography: preparing for examination questions on fieldwork A series of five 40-minute webinars running in March 2020. See www. geography.org.uk for more information and booking details.

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# **New fieldwork titles for 2020**



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25

#### Duncan Hawley

Duncan highlights the significance of powerful knowledge for teaching physical geography that lies beyond the obvious.

# Beyond awe and wonder: using powerful knowledge to release 'hidden' physical geography

Type 'Geography school awe and wonder' into Google search and thousands of results are returned. Click to open any of these and typically you land on the geography department pages of a school website. Below are three quotations plucked at random from searches, each found in the opening statements about geography in the respective schools:

Geography will give young people a sense of awe and wonder for the world around them.

Our aim in the department is to highlight the 'awe and wonder' of Geography.

A sense of 'awe and wonder' is created through studying the world around us, for example by looking at impressive natural features, which contributes to students' spiritual development.

This brief trawl reveals that 'awe and wonder' is endemic in geography teacher-speak. Further, it appears that awe and wonder are taken somewhat for granted; something students experience passively; and that the role of the teacher is simply to facilitate awe and wonder experiences.

#### Future geographies

Young and Muller (2010) set out three curriculum 'scenarios', all of which can be present in school geography, sometimes even in the same curriculum at the same time.

**Future 1** reflects a traditional, fact-based curriculum, which treats knowledge as 'given' and 'fixed'. It is a curriculum of transmission: teachers are the givers and students the receivers. There is little dialogue or engagement.

**Future 2** reflects the 'progressive' curriculum that emphasises skills and competences. Students 'learn to learn', but the subject discipline may seem arbitrary. Future 2 can look like a curriculum of engagement, but the engagement is with the pedagogic activity, not the subject.

**Future 3** is concerned with active pedagogies, but also in the shifting ideas and arguments that create powerful disciplinary knowledge, rather than inert or given 'facts'. Future 3 curriculum thinking is the foundation for Geocapabilities (2019).

**Figure 1:** Future geographies curriculum scenarios.

In 2001, reacting to a style of geography teaching that was heavily weighted towards 'delivery of knowledge' – the 'Future 1' curriculum (Figure 1) – Simon Ross advocated encouraging students to develop aesthetic responses to their environment:

... awe and wonder can be defined as experiencing an appreciation of place beyond its immediate measurable components ... it is about feelings, impressions and experiences, about 'being' in a landscape and feeling part of it, and, ultimately, it should lead to a greater understanding of our true sense of place in the world. (Ross, 2001, p. 86; emphasis added.)

However, the danger of this 'Future 2' interpretation is that it may rest on an illusion which lies in teachers believing or assuming the experience of awe and wonder is in itself sufficient to lead to greater understanding. Lambert (2016), Bustin (2019) and GeoCapabilities (2019) advocate a 'Future 3' approach: taking students beyond their immediate experience through engagement with powerful knowledge. Without powerful disciplinary knowledge the geographical understanding that lies in awe and wonder experiences will be inaccessible to most students.

# Powerful knowledge and physical geography

Awe and wonder are very often associated with physical geography phenomena and these can be an effective way of grabbing students' interest and attention – they provide a 'wow' factor. To understand how powerful geographical knowledge can extend their use in physical geography it is helpful to examine Ross's 2001 definition and consider what sort of 'feelings, impressions and experiences' (p. 86) comprise awe and wonder.

Awe is a feeling of reverential respect mixed with fear or wonder. Wonder is a feeling of amazement and admiration, caused by something beautiful, remarkable, unfamiliar, unexpected or mysterious. (Dictionary.com, 2019)

Powerful knowledge has the capacity to move students beyond the emotional and obvious and achieve enduring understanding by providing new ways of thinking about the physical world (Figure 2). The role of the teacher is to use their expertise to unpack the powerful knowledge lying behind the awesome and wonderful, and recontextualise it in teaching approaches that open up new ways for students to 'interpret' what they see or experience.

Robert Frodeman (1995) likens this interpretive approach to viewing a famous work of art but not seeing anything of great significance until an art expert introduces a set of concepts for 'reading' the artwork, when the piece seems to undergo a striking change. Thereafter, the ability to probe deeper reveals the significance in artworks and an understanding of why some works are highly regarded (and famous).

# Powerful knowledge and physical geography

**Type 1** offers new ways of thinking about the physical world, using 'big ideas' such as: energy, Earth systems, cycles, tectonics, landscapes, deep time, evolution

**Type 2** offers ways of analysing, explaining and understanding the physical world (developing substantive concepts), using ideas to:

- analyse e.g. pattern, flows, distribution, scale
- explain e.g. weathering, water balance, glaciation
- generalise e.g. models, interconnections between system components.

**Type 3** offers insight into knowledgemaking ('how do you know?'), knowledge that gives students some critical power over their own geographical knowledge; how knowledge is developed and tested in geography; is it believable – and why?

**Figure 2:** A typology of powerful knowledge and physical geography, adapted from Maude (2016). Maude outlines five types of powerful knowledge of which only the first three are given here.

#### Case study part 1: The Malvern Hills

The teacher showed a year 8 class the spectacular image of the Malvern Hills in Figure 3 at the start of a unit on 'Landscapes of Britain'. The aim was to provoke an emotional response to the landscape and generate 'awe and wonder'. Students were asked to imagine they were the person in the photograph; what their feelings were and what they were thinking as they looked at the view. Responses varied, but many students expressed some sort of awe or wonder. The teacher picked up on one response - 'Wow, these hills must be high - they stick up above the clouds!' The teacher showed another image of the Malvern Hills (Figure 4), then took the students through a sequence of questions summarised in Figure 5. These were designed to draw out an understanding of physical geography, based on the students' emotional responses to the photo. The lesson then moved on to teaching about the distribution of highland and lowland areas in Britain, linking to a geological map of the British Isles.

## Awe and wonder extended by powerful knowledge

It would be easy to think that the teacher's plan to generate awe and wonder using the spectacular image in this lesson was a success. The students' responses demonstrated awareness of some rock names and the ability to categorise them as 'hard' or 'soft'. However, their knowledge



Figure 3: An 'awe and wonder' image: the Malvern Hills emerging from a sea of cloud. Photo:  $\ensuremath{\mathbb{O}}$  Adobe Stock Photo.



Figure 4: The Malvern Hills rise steeply from the Worcestershire plain. Photo:  $\[mathbb{C}\]$  David Martyn Hunt (CC by 2.0).

Teacher: Why do you think the Malvern Hills stick up?

Student: Because there are hard and soft rock and the hills are made of hard rocks.

Teacher: Can you give me any examples

of hard and soft rocks? Student: Lavas are hard.

Student: Granite is a hard rock.

Teacher: Good ... and what about examples of soft rock?

Student: Sand ... I mean sandstone.

Student: Clay.

Teacher: OK ... What do you mean by hard and soft rocks?

Student: Hard rocks don't wear away ... soft rocks wear away more easily.

Teacher: What makes rocks not erode easily?

Student: Because they are tough and hard.

Teacher: OK, so there are tough rocks and soft rocks. The soft rocks erode easily and usually make up the lowland while the hard rocks resist erosion and form mountains or steep hills ... and on the coast, headlands are made of hard rocks and the bays between are made of soft rock.

**Figure 5:** Sequence of teacher questions and student responses to draw out knowledge of physical geography in response to a photo.

was confined to the concrete and obvious why there are 'hard rocks' and 'soft rocks' remained a mystery. Their circular 'hard rock'/'soft rock' reasoning revealed few, if any, worthwhile insights. Rather, it showed up the limitations of the 'Future 1' approach: the acquisition of factual knowledge that disconnects rather than promotes inferential knowledge. In contrast, 'Future 3' and powerful knowledge foster the confidence to think beyond the obvious and interpret rocks and physical landscapes in a different way. What is the powerful knowledge underpinning 'hard' rock and 'soft' rock, and how can it be used to extend the awe and wonder of rocks and landscapes?

## Case study part 2: The material marvel of rocks

The aim was to give students a further 'wow' moment: the sudden realisation of the 'hidden' geography that takes them beyond their factual knowledge. Granite (and igneous rock) is usually labelled as 'hard' rock and sandstone (sedimentary rock) as 'soft' rock, presenting a key question to investigate: Are there different properties in each of these rock types that cause them to be a 'hard rock' or 'soft rock'?

Students were asked to compare samples of granite and sandstone and guided to 'look inside' the rocks for clues that would help them predict the strength of different rock types and, ultimately, explain the formation of landscapes.

They weighed each rock sample, then placed them in water. They noted bubbles emerging from the sandstone but none from the granite (Figure 6). The rock samples were removed, surface-dried and weighed again. The granite remained the same weight whereas the sandstone weighed more. Students were asked to explain the bubbles and the increased mass of the sandstone.

Most students suggested it was air escaping from the sandstone and being replaced by heavier water, which accounted for the increased mass. They reasoned that the sandstone must have 'holes' or spaces in the rock (i.e. pore spaces), whereas the granite must not. Moreover, the pores must be connected. A close inspection of the rock samples confirmed this theory.

To explain how different rock types have spaces within the rock or no spaces, students were asked to look at the shape and arrangement of the grains in each rock and then modelled them using a tessellation puzzle on paper followed by 3-D modelling using marbles (sandstone grains) in a container and a wooden interlocking puzzle (granite grains) (Figure 7)

The grains in the interlocking puzzle held together whereas the marbles fell apart when the container was turned upside down. Scratching the sandstone sample with a metal object, the students were able to scrape grains off the rock, but could not do this when scraping the granite.





Figure 6: Rock types immersed in water to investigate differences in material grain arrangement – (a) granite (b) sandstone. Photos: © Peter Kennett/Earth Science Education Unit.

All the students realised that the sandstone grains must be 'glued' together. They had discovered a fundamental material difference between two types of rocks – interlocking and non-interlocking. This also explained why the sandstone was porous but the granite was not. Asked how a non-interlocking rock might be stronger, the students suggested (i) different strengths of glue; (ii) all the pore space filled with glue (strong); or (iii) just the contact places glued (weak). The teacher asked if a glue could be weakened with water and challenged students

Gaps between the grains	Use several large coins of the same size side by side – you can easily see the spaces between the 'grains'	Permeable rocks	Sedimentary rocks	
Interlocking crystals	Use rectangles of paper, cardboard or plastic side by side – with no gaps between the 'crystals'	Impermeable rocks 1	Igneous rocks	
Interlocking crystals	Use long thin rectangles of paper, cardboard or plastic side by side – with no gaps between the 'crystals'	Impermeable rocks 2	Metamorphic rocks	

to predict if this was more likely to occur in an interlocking (igneous) rock or a non-interlocking (sedimentary) rock.

Finally, the teacher asked if students now thought of rocks differently. They were convinced it was better to think of rocks in terms of their strength or weakness than to describe them simply as hard or soft.

The powerful knowledge gained from this extension to 'awe and wonder' gave students new ways of thinking about rocks and physical landscapes. They were now able to move beyond the obvious and conceptualise, infer relationships and predict implications. They understood grain relationships in rocks; how these can be used to reliably classify rocks into different types (igneous, metamorphic and sedimentary); rock 'glue', strength, porosity and permeability; the role of water in weathering rocks; how rocks are formed and how they influence landscape development; and the environmental importance of rocks to groundwater resources, oil and gas and waste storage. Wow!

#### Conclusions

The 'wow factor' is important for stimulating interest in physical geography and can engender sensory and emotional responses. For a more enduring learning experience both teachers and students need to probe beyond the obvious and release the 'hidden' physical geography. The hidden lies in the abstract and conceptual ideas that emerge from a broader established system of disciplinary thought, which has been termed 'powerful disciplinary knowledge'. Enabling students to make sense of physical geography through the lens of powerful knowledge gives them the intellectual power to develop new ways of seeing and to place aspects of the physical world in a more meaningful context. To release 'hidden' physical geography teachers need to engage with deep thinking about the subject and what this means in terms of powerful knowledge. In turn, this enables teachers to shape the curriculum so as to reveal and encourage exploration of awe and wonder that would otherwise remain hidden or mysterious to the student. | **TG** 

#### Figure 7: Powerful

modelling: students model the arrangement of grains in different rock types and make the link with permeability. Diagram courtesy of Earth Science Education Unit.

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#### Resources

Outlines of the rock comparison investigation can be downloaded at: https://www.earthlearningidea.com/PDF/Rock\_detective.pdf https://www.earthlearningidea.com/PDF/Modelling\_for\_rocks.pdf | https://www.earthlearningidea.com/PDF/Space\_within.pdf Visit the Malverns website (2019). Available at https://www.visitthemalverns.org/things-to-do/walking/

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Duncan Hawley is Chair of the GA's Physical Geography Special Interest Group and was GA Consultant to the GeoCapabilities project, exploring the use of powerful knowledge for geography teachers.

Email: duncan.hawley. geography@gmail.com Grace outlines the importance of using the geography curriculum as the progression model and decoupling formative and summative assessment.

# Placing the geography curriculum at the heart of assessment practice

#### Introduction

The importance of a geographical education for young people is significant – it ensures they are well prepared to make sense of the world and can engage in contemporary debates about the geographical challenges that shape our societies and environments. As a geography teacher thinking about assessment, I start by asking what geography is to be learnt and what it means for my students to have learnt it.

Assessment is an area of professional practice that is often constrained by the complexity of the professional landscapes we work in. For instance, school accountability measures have led some teachers to feel there is more time devoted to assessment and feedback and less to developing students' geographical knowledge (Mitchell, 2017). Others are being obliged by line managers to reinvent 'levels' or bring GCSE grades into key stage 3. Such assessment systems might fit neatly into the school's accountability structures and provide an illusion of 'progress', but they are flawed. When an assessment model becomes the progression model, the tool of measurement becomes the thing been measured and we end up with meaningless statements, where progress in geography is reduced to 'moving from a grade 5 to a grade 6'.

Ofsted's (2019) Education Inspection Framework appears to place an emphasis on subject specialists using assessment effectively to serve student learning, while also ensuring 'leaders understand the limitations of assessment and do not use it in a way that creates unnecessary burdens for staff or learners' (p. 11).



This article proposes two principles that might be useful to think through in relation to both formative and summative assessment. Ultimately, of course, this a work in progress, because any questions about curriculum, pedagogy and assessment of geography need to be continually revisited as part of the enriching dialogue we can have as a subject community. However, I have found these principles useful when thinking about assessment in geography, both as a classroom teacher and as leader of a geography subject community across a Trust.

#### 1. Curriculum first

#### The curriculum as the progression model

We must start thinking about assessment with the question of what geography is to be learnt. As geography teachers, we ought to be driven by what we can define as the gold standard of geography education. This should be planned for and visible in the enacted curriculum. The assessment strategy follows, and should be designed to serve in relation to the curriculum rather than assessment structures determining what is taught. This chimes with Christodoulou's (2017) conviction that 'curriculum planning and its formative assessment should be structured around mastery of building blocks, not "retrofitted" to the test structure and requirements'.

Therefore we must consider the scope and interplay of knowledge within the geography curriculum, as geographical knowledge always sits in relation to other knowledge and makes future learning in geography possible. Geographical knowledge underpins our capacity to notice things, enabling us to be able to spot similarities and differences, and make comparisons between places and processes. As geography teachers, we play an important role as 'chief resonancemanager' (Counsell, 2000 p.68) by considering how our dialogue, and the explanations and texts we use resonate with what has gone before for our students. This is necessary because within learning the capacity to make sense of any new knowledge is dependent upon prior knowledge (Wood, 1988; Anderson, 1997); the accessibility of existing schema influences what is noticed when reading and listening (Rosch, 1975), which in turn influences the extent to which new content can be embraced. As teachers we have to be mindful of the 'meaning-making' that is possible for our students (Derry, 2014) and ensure that over time students have the breadth and depth of geographical knowledge that allows them to comprehend geographical texts, be affected by the geography around them, and be able to

Figure 1: A high-quality geography education helps young people make sense of the world. © Geographical Association/Mark Lupton

Spring 2020 © **Teaching Geography**  call upon the apposite words to write and speak geographically. We can do this by being thorough in curriculum design.

Teachers need to consider carefully how geographical knowledge underpins accomplishment in the subject, such as how it can enable students to draw on their everyday knowledge through a geographical lens, shape their geographical thinking in the classroom, and empower them 'to follow and participate in debates on significant local, national and global issues' (Maude, 2016, p.75). To illustrate the scope of this form of curricular thinking, these are the kinds of curriculum orientated questions that might be posed when thinking about how students encounter and learn about the different dimensions of climate change across key stage 3. For example, 'When do our students learn about how the impacts of climate change play out differently across the world and are exacerbated by other geographical issues? How do we illuminate the challenge of big (but uncertain) risks that are associated with climate change for ecosystems, food production and extreme weather? Do we do enough to highlight how complex and inter-related these challenges are? Do we do justice to illuminating the ethical dimensions that are inherent in how governments mitigate and adapt to the impacts of climate change?' (Healy, 2019). Further, through the geography curriculum we want to consider how the young people in our classrooms 'connect with the landscapes and environments around them and how this might mediate the way they envisage current and projected impacts of climate change affecting their everyday lives now and in the future' (Healy, 2019).

If we treat the curriculum as the progression model (Fordham, 2017), we are able to say that if a student has learned the curriculum, they have made progress and by definition they have got better at geography. Getting better at geography means mastering specifics that can be both abstract and concrete, so by setting out those specifics we can meaningfully define progression.

### The manifestation of geographical knowledge over time

Assessment can serve to ensure student security in the knowledge that they need to retain. They will be better able to do this if they have secure knowledge-building schemata (Rumelhart, 1980). Having the background knowledge at their fingertips allows students to quickly assimilate the new information. As a geography teacher, I need to consider at a micro- and macro-scale what the generative power of substantive knowledge is: 'What enables students to think about X in this lesson, so that next lesson they can grasp Y?' and 'What am I choosing to assess in year 7 and how will I know the fruits of this in years 9 or 11?'

This is not about reducing a geography curriculum to passively received knowledge to be recalled, but rather about appreciating that in the end we are helping our students to, for example, grapple with and eventually grasp the uniqueness of place and the complexity of sustainable development.

#### Curriculum sequencing

While focussed curriculum planning might be split up into units of work, curriculum thinking should not be restrained by a topic-by-topic approach because we do not want students' geographical knowledge to be solely tied to particular topics but want it to become generative across new contexts. This means that we need to think carefully about what knowledge students need to retain and retrieve in the longer term, and what parts of that knowledge we need to them to work with. Not all curriculum knowledge plays the same role for our students.

Curriculum sequencing matters. This is ultimately about how and why a certain section of the curriculum prepares students for future content, such that it has a proximal function to make the next stage possible and an ultimate function to do an enduring job, as Counsell (2018) highlights. In terms of curriculum thinking this means we need to think about the incidence, blend and interplay of different types of geographical content to serve as part of students' wider geography curriculum journey. This is also why it is necessary to think about the key geographical concepts that students encounter repeatedly and how we could use this as an opportunity to ensure students develop more nuanced understandings of these concepts over time.

Many geography educationalists have stressed the importance of a holistic approach to geography curriculum planning (Renshaw and Wood, 2011; Rawding, 2014), so assessment practice should take account of this and not drive the atomisation of the geography curriculum.

### 2. Decoupling formative and summative assessment

### Why decouple formative and summative assessment?

While there has been much discussion about one assessment serving a number of different purposes, under the premise of reducing the burden on teachers (e.g. Weeden, 2008), I would suggest that formative and summative assessments should be decoupled. Often the purposes of assessments can pull in different directions, so trying to use assessments for multiple purposes often leads to problems.



**Figure 2:** Expanding domain for summative assessments across key stage 3.

We need to recognise that formative assessment might look completely different to summative assessment, because becoming secure in the building blocks is not necessarily the same as the final performance (Christodoulou, 2017). Formative assessment does not merely anticipate the structure of summative questions, but rather allows us to check that students are secure in the small steps they need to take to be able to achieve in the final performance. We use formative assessment as a means of capturing useful and immediate information about what students have and have not secured, which allows us to be responsive in our teaching.

Making formative inferences from summative tests is inefficient and can be misleading. Public examinations require performance in complex operations which call up a range of smaller skills and items of knowledge. The identification of the missing pieces will elude us if we rely chiefly on question-level gap analysis to establish next steps for progress. While for each individual assessment we can make inferences from the comparison between students within the same year group, we cannot confidently make inferences from comparisons between subjects or about student improvement from a previous test. Summative assessments should sample from

**Figure 3:** Mixed constitution of assessment – formative assessment.

an ever-increasing knowledge domain. Sampling from the whole domain means we are drawing on curriculum content from beyond what has been most recently taught – term by term and year by year. For example, for key stage 3 summative assessments, year 8 students would be assessed on what they were taught in year 8 and year 7 (Figure 2).

#### A mixed constitution of assessment

The danger of assessments that are 'almost morphing into mini-GCSEs' (Mitchell, 2017, p. 243) at key stage 3 means that we appear to be wasting time showing year 7–9 students how to jump through exam hoops when we could be ensuring that they are secure across the domain that we are teaching. Any formative assessment system should recognise the underlying components that build security in composite tasks (Christodoulou, 2017). For example, ensuring students can see how their geographical knowledge fits into wider temporal and spatial scales before they need to deploy it in an enquiry outcome task.

Basing assessment purely on GCSE types of question and typical mark schemes is flawed. It puts composites before components, whereas we need to assess the building blocks as we go along,

Туре	Nature and purpose	Frequency
Maps and timeline tests	Zoomed-in 'topic' maps and timelines from memory at strategic points to check recall of topic knowledge relevant to current topic. Approach informed by Uhlenwinkel (2014) and Counsell and Carr (2014)	Towards the end of each topic to ensure students have 'fingertip' knowledge before final outcome task
	Zoomed out thematic/comparative maps and timelines from memory to check new and current knowledge is being fitted into wider temporal and spatial scales. Approach informed by Uhlenwinkel (2014) and Counsell and Carr (2014)	Less frequent, at strategic points; to refresh transferable knowledge prior to needing it in a new topic
Quick quizzes	Written or oral, e.g. 5–10 questions; to check recall of key landforms, processes, dates, concepts that students need to have at their fingertips	Start of lesson, weekly, and informal
Hinge questions	One key question used to highlight the general direction of students' learning. Once outcome ascertained, the class is divided to address areas identified. Developed from Wiliam's (2011) approach to hinge questions, as used by Renshaw (2015)	As appropriate, typically within a lesson sequence
Substantive concept checks	Students write a short paragraph summarising an answer to a question about a substantive concept that has figured prominently during the lesson sequence, e.g. 'Why is sustainable development necessary?' 'How is globalisation shaping?' 'Why do cold environments have such low biodiversity?' This tests the indirect manifestation of knowledge – how other layers of detailed knowledge flavour how students make and use substantive concepts in geographically grounded ways. These can also be designed to establish whether students hold any common misconceptions	As needed, when useful for specific diagnostic purposes
Fieldwork write-ups	Students produce one significant part of a write-up (e.g. methods, analysis or evaluation)	Once for appropriate lesson sequences
Geographical data analysis	Students are given a set of geographical data from the topic to analyse. Graphs will be provided or produced by the students. Some data sets will be explored in ArcGIS Online	As appropriate, typically within a lesson sequence
Enquiry/final outcome task	Extended piece of writing (e.g. 'Big Geography Question') or another geographically meaningful outcome task, answered at the end of each lesson sequence. Assesses knowledge developed in that enquiry. Informed by Taylor (2008), Lofthouse (2011), Roberts (2013) and Rawding (2017). Assesses the capacity to deploy different levels of knowledge (topic/transferable/conceptual) to answer a geographical question with a conceptual focus. Mark schemes would be derived from departmental long- and medium-term planning for progress in conceptual and other kinds of knowledge	End of each enquiry (i.e. after around 6–12 lessons)

**Note:** The idea of a 'mixed constitution' of assessment was developed by Fordham (2013), which complements the notion of 'mixed economy' of assessment described in the GA's (2014) 'An assessment and progression framework for geography'. This mixed constitution of formative assessment within geography has been developed from the work of the University of Cambridge PGCE history mentors community, which held regular discussions on history assessment, led by Christine Counsell.

and this requires multiple forms of assessment. An example of what this might look like for formative assessment is illustrated in Figure 2, which visualises what Christodoulou's (2017) 'mastery of building blocks' might mean for geography. Here, formative assessment is used diagnostically: to identify areas of concern, which inform shortterm planning; and to inform revisions to next year's curriculum plan. This model recognises that there are lots of different building blocks in geography. For example, students need to be able to draw on specific and locational detail with speed and accuracy, so we have map and timeline tests and quick quizzes. It is about making certain items non-negotiable for students and determining this on the basis of what these items will later make comprehensible. This is also about moving beyond the notion that merely covering something is enough as this leads to an 'illusion of knowledge' (Brown et al., 2014). Students also need to grasp complex concepts, like sustainable

development and globalisation, so we ask them to write short paragraphs from which we can assess their geographical vocabulary and the quality of their explanations. We also pay attention to the role of fieldwork and how effectively students can engage with geographical data. And finally, we want students to be able to deploy this knowledge within geographically meaningful tasks.

Geography teachers have thought carefully about how to embed formative assessment within teaching sequences, as exemplified by the use of hinge questions (Renshaw, 2015) as a form of diagnostic assessment. To establish whether students understand the significance of freezethaw weathering in the formation of scree slopes, Renshaw asked 'Where are you most likely to find scree slopes forming?' This a powerful example of how formative assessment can elicit the extent of students' understanding and give teachers opportunities to ensure students are secure in their geographical learning. | **TG** 

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#### Alice Matthews

# It's virtually a glacier

Alice describes two virtual fieldwork sessions on glacial landscapes in year 9 and evaluates them in relation to actual fieldwork. This article explores how virtual fieldwork can be used to support students' understanding of glacial landscapes. This is a complex topic that involves intangible concepts in (often) inaccessible environments. The findings presented in this article are part of a larger research project that I conducted with a class of year 9 students at an all-girls school in Hertfordshire as part of my PGCE. The findings are intended to inspire and encourage teachers to experiment with virtual fieldwork as an engaging medium through which to teach challenging geographical topics.

The extent to which virtual fieldwork can replace the valuable assets central to can replace actual fieldwork is questionable. Physical geography topics in particular can involve difficult concepts that are best depicted in real life. For example, dispelling the misconceptions surrounding river velocity can best be tackled on fieldwork, when students can see the processes occurring first-hand. However, given the financial and time constraints on conducting actual fieldwork, virtual fieldwork presents an exciting alternative.

Taylor (2005, p. 157) defines virtual fieldwork as a 'representation of a specific geographical area using digital images and/or photographs/video', although virtual fieldwork is not confined to these media. For example, Fryer (2017) shares her experience of virtual fieldwork on coasts using PowerPoint as an interactive medium that allowed students to 'travel' to different sites along the Dorset coast.

#### Virtual fieldwork resources

Fuelled by a desire to explore creative ways to teach geography, I created two virtual fieldwork sessions using these websites: VR Glaciers and Glaciated Landscapes (VR Glaciers, 2019) and BRITICE Glacial Mapping Project: version two (BRITICEV2, 2017). These sessions aimed to give students an enriching, interactive experience that enhanced their understanding of glacial landscapes without compromising the values of real-life fieldwork. The sessions focused on glacial landscapes in the UK, exploring the glacial landforms and processes that have shaped the surrounding environment, a challenging topic for students and one that lends itself well to virtual fieldwork (McDougall, 2019).

Each session lasted one hour, and I issued students with a fieldwork booklet containing instructions and activities for them to work through during the session. Groups of two or three students worked on one computer throughout both sessions.

Prior to the sessions I taught three lessons introducing students to glacial landforms and glacial processes to ensure that they had a foundation of knowledge to build on. Before these lessons, students had very limited knowledge of glacial landscapes.

#### Helvellyn virtual field trip

The first session was a virtual field trip to Helvellyn in the Lake District. This was conducted using the VR Glaciers website - virtual tours of a variety of glacial landscapes, from Switzerland to the USA. The website includes images, maps and data files that provide a comprehensive assembly of resources to support each virtual tour. The tour section of each landscape is a collection of images (panoramas) accompanied by a map that locates the area shown on each image. Students are able to zoom in and out of the landscape, switch between panoramas and get a 360° view of each area. I selected one area, including both a corrie and an arête, for students to draw a field sketch. The session focused on giving students an 'experience' of being in a glacial environment, allowing them to visualise glacial landforms and observe evidence of the glacial processes that had carved out the landscape.



Figure 1: Panorama 19 of the Helvellyn tour, the area that students were required to field sketch. The orange dots are different locations/sites you can click on to access a panorama of that location. Source: VR Glaciers.

#### Exploring corrie size with BRITICEV2

The second session had more of a skills focus, requiring students to engage with numerical data and develop their ability to analyse it critically. Their main activity was compiling a dataset of corrie size across the UK using BRITICEV2 (2017). This is an interactive map of the UK annotated with thousands of glacial landforms from the last ice age. Each landform is accompanied by a definition and an attribute table of landform details, including its size and shape. Using the attribute table students gathered data on corrie length and width across England, Scotland and Wales (Figure 2). They calculated the mean corrie size in each country, then listed the advantages and disadvantages of their dataset in terms of determining corrie size across the UK.

To analyse students' progress in understanding, I conducted a concept mapping exercise. Wholeclass guestionnaires were issued at the very beginning of the lesson sequence and before and after the sessions. After the sessions I also interviewed a group of five students to assess how they felt the virtual fieldwork had helped develop their understanding of glacial landscapes.

The initial concept mapping exercise revealed that students had very limited prior knowledge of glacial landscapes, with many students writing 'I don't know anything' in their responses (Figure 3a). Following the virtual fieldwork sessions, however, students added subject-specific terminology to their concept maps; for instance, describing a corrie with 'small lake called a tarn' and describing erosion 'like scratching' (Figure 3b). This suggests that the sessions deepened students' understanding of glacial landscapes, a conclusion supported by the post-fieldwork questionnaire, in which 84% of students either agreed or strongly agreed they were confident that they now understood what glacial landforms are, compared to just 59% before the sessions.

Location		Corrie Name	Length (m)	Width (m)	Sketch
Scotland	1	Loch Brandy	1,071.00	1,029-00	
e.g. The Scottish Highlands	2	Toll Anich	1123.00	1272.00	0
	3	nam Breac	1397.00	880.00	D
	1	Daeur Faur	387.00	415.00	0
wales e.g. Snowdonia	2	Llyn Fawr	618.00	9267-00	0
	3	Cerrizy y Gualch	822.00	1674.00	0
England	1	Yoke N	694.00	721.03	0
e.g. The Lake District	2	Ingleborougn	477.00	926.00	0
	3	Green Side	589.00	690.00	P

#### **Evaluation**

Overall, students responded positively to both sessions, engaging with both websites with curiosity and enthusiasm. Lessons were interactive, with students working in pairs or small groups, demonstrating that virtual fieldwork does not compromise the synergetic value of actual fieldwork.

The interview following the sessions revealed that students thought the BRITICEV2 session had done more to enhance their understanding of glacial landscapes than the VR Glaciers session: the BRITICEV2 sessions contained more information, and enabled them to make comparisons between corrie size in different parts of the UK. This expanded their locational knowledge, whereas the virtual field tour focused on just one UK location. However, students enjoyed the interactive elements embedded in the VR Glaciers website, such as the ability to zoom in and out, and acknowledged that the virtual tour had helped them better understand what a glacial landform looked like, something they felt that they could not have gained from a classroom lesson.

Figure 2: Student dataset of corrie size in the UK

Figure 3a: Student concept map showing original understanding of glacial landscapes



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The students who were interviewed commented on the focus on corries throughout the fieldwork sessions: although they felt they now had a strong understanding of this particular landform, they felt insecure in their understanding of other landforms. This highlights the difficulty of accessing breadth in virtual fieldwork, although this is a drawback I have also observed during an actual field trip with year 12. On the field trip, the glacial landscapes session focused on the formation of drumlins, and students spent a whole day measuring the cross-section of a drumlin in order to infer the direction of ice flow. This suggests that fieldwork as an overall domain within geography can allow students to deepen their understanding of a single glacial landform, but can be limited in the extent to which it broadens their understanding of the totality of glacial landforms.

#### Time constraints

No student managed to complete the fieldwork booklet in either session, suggesting that my expectations of how much content could be covered were over-ambitious. This was particularly evident in the first session: very few students managed to complete a second field sketch. Only having time to look in detail at one site may also have contributed to their limited understanding of other types of glacial landforms. Likewise, lack of time may have restricted their understanding of the skills element: some students interviewed did not reach the data analysis stage of the BRITICEV2 session. This in turn could have contributed to the conclusion that corrie size was biggest in Scotland. These time constraints support Fryer's (2017) finding that it is important to allow enough time to conduct virtual fieldwork.

Finally, supplementing the virtual field tour with a commentary about the landforms they were seeing would perhaps have reassured students that they were identifying the landforms correctly. Sources for such a commentary could include web pages (Taylor, 2005) or video clips (Fryer, 2017).

#### Conclusion

Overall, the findings suggest that virtual fieldwork not only enhanced students' understanding of glacial landscapes but also built vital interdisciplinary skills, such as numeracy and evaluation skills. I strongly encourage teachers to experiment with virtual fieldwork to supplement classroom-based learning. Virtual fieldwork allows students to explore environments that may be inaccessible to them. There was no evidence to suggest that the values of actual fieldwork were lost and that virtual fieldwork cannot be a useful alternative, particularly when actual fieldwork is not possible. I advocate virtual fieldwork as a fulfilling and enriching geographical experience that is both challenging and rewarding. | **TG** 

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# Capturing a 'sense of place' through fieldwork

Sophie describes how video ethnography techniques can evoke 'atmosphere', adding a perspective to the study of place and making A level fieldwork more meaningful.

The 'Changing places' unit in the A level specifications bridges the gap between post-16 and university level human geography. It requires students to consider complex ideas, such as space and place, which are more abstract than those studied at GCSE. This can create further challenges for students undertaking a place-based study for the A level non-examined assessment (NEA), as it can be difficult to find fieldwork methods that get to the heart of abstract concepts.

Key term	Definition
Place and space	Humanistic geographer Yi-Fu Tuan (1977) makes a clear distinction between place and space. Space can be conceived of as location devoid of meaning; place is made meaningful through human experience and attachment to it.
Ethnography	A primary fieldwork method using observation of society.
Atmosphere	The intangible quality of a place. It is linked to (and can shape) the place's meaning.
Perceptions of place	How a place is interpreted, at second hand information or through lived experience.
Video ethnography	Filming of objects in their natural setting in order to evoke lived experience.

Figure 1: Definitions of key terms used or referred to in this article.

This article draws on methods I used to conduct primary fieldwork in Berlin to suggest creative fieldwork methods for the NEA, with practical tips on the use of video ethnography. It has these advantages:

- students can collect data on abstract ideas, such as the meaning of a place
- it gives them a more progressive data collection technique for the methods section of their NEA
- it opens up exciting possibilities for data presentation, in terms of video footage and audio commentary
- it offers more opportunities for evaluation, which accounts for the majority of marks in the NEA.

In cultural geography, place is defined as location plus meaning, meaning being the essential factor that shapes a place. But when applied to practical fieldwork, 'meaning' presents challenges for data collection. The closest that most student NEAs will get to meaning is collecting data on public perceptions, using traditional techniques such as questionnaires (although emotionmapping is an increasingly popular approach). However, there is currently very little use of video in the NEA, despite modern smartphones having the capability to record video footage. Video ethnography could open up new opportunities, allowing students to add a dimension to their place study.

#### Capturing the atmosphere of a place

A useful starting point to get students thinking about the meaning of a place is to introduce the idea of 'atmospheres'. In simple terms, atmosphere refers to how a place can be pervaded by an intangible essence or quality that can be experienced, or sensed, when you are physically present. Anderson and Ash (2015) have written extensively about the concept and describe the atmosphere of a place as something 'there' but also 'not quite graspable' (p. 49) Students could investigate what the atmosphere of a place feels like on a fieldwork visit, where this atmosphere they sense might come from, and how this atmosphere is linked to and shapes the meaning of a place.

# Atmosphere evoked by abandoned objects

The concept of atmosphere was little known to me before I conducted my undergraduate fieldwork at a former Soviet military base, Wünsdorf-Waldstadt in Germany. It lies well off the conventional tourist track, about 25 miles south of Berlin. Known informally as 'the Forbidden City' (Figure 2), the site was occupied by 75,000 Soviet soldiers and their families following the Second World War.



Figure 2: The abandoned Soviet military base at Wünsdorf-Waldstadt, near Berlin. Photo: © Sophie Brand

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It was complete with shops, schools and a swimming pool. The last soldiers abandoned the site hastily 25 years ago and some of the buildings have fallen into disrepair. However, many miscellaneous items remain, including uniforms and toys. They are an eerie reminder of the former Soviet occupation (Figure 3), and the presence of these objects enveloped the place in a strange, spectral quality. Although the site is crumbling the objects were a 'living' reminder of the past. There are no participants to interview or questionnaires about public perceptions to collect, but the meaning of this place can be understood through the atmosphere these abandoned objects create. This is difficult to comprehend without primary experience, but the video ethnography qualitative technique made it possible to collect data indicating the atmosphere of the place.

#### Practical tips on video ethnography

As a researcher, video ethnography involves tracking and recording what you see and hear as you walk while carrying a recording device. In Wünsdorf-Waldstadt the video camera captured my physical movements over time (Figures 4 and 5). For primary fieldwork, a video camera has these advantages:

- it does not lock the place into a static frame like a photograph
- it allows viewers to visualise the fieldwork site through 360°
- it allows researchers to 'revisit' the fieldwork site by replaying the footage.

Watching my experience as I filmed the corridors where Soviet soldiers once walked can help viewers understand the atmosphere of this place: they can see the gloom I saw and hear my footsteps and the echoing voices of other researchers in an otherwise eerie silence. The video recording also offers viewers a more direct experience of the research process, revealing the positionality of the researcher (Gallagher, 2014, p. 13). Indeed, only video ethnography provides visual evidence of what the researcher did. For a place-based NEA, another advantage is that students can comment on how *they* interacted with the place (and perhaps explore how this interaction shaped new meanings in the place).

#### Evaluation for the NEA

As with all research methods, video ethnography is not without limitations and students can address these in the evaluation section of their NEA:

- indirect experience of an atmosphere, as a viewer, will never be as reliable as first-hand experience
- subsequent reflections on the footage could cause the researcher to modify the initial findings.

However, students can mitigate these limitations by keeping a diary or providing an audio commentary over parts of the video to ensure that their conclusions remain consistent. They could also comment on the role of video editing software. While some geographers have outlined the advantages that editing software can have for the analysis and data presentation stages of fieldwork (e.g. Garrett and Hawkins, 2014), the ability to change and adapt footage could also have implications for the credibility and validity of data.



Figure 3: Objects left by the departing Soviet soldiers and their families © Media Drum World/Alamy Stock Photo.



Figure 4: Conducting video ethnography in the corridors of Wünsdorf-Waldstadt. Photo: © Sophie Brand.



Figure 5: A 'still' from the video footage. Photo: © Sophie Brand.

A word of caution: holding a video camera when navigating a site can be disorientating for the researcher, as Gallagher (2014) emphasises. Students must be careful when walking with a video camera, and may benefit from conducting video ethnography in pairs.

#### Conclusion

A level students are unlikely to be exploring an abandoned military facility for their NEA, but they can apply the techniques of video ethnography demonstrated in the Wünsdorf-Waldstadt example to suitable NEA locations. For instance, students in East London could video a visit to the flagship Westfield Centre and comment on how the atmosphere compares with the Stratford Centre next door, which has not undergone similar regeneration. Students in Wales could record their walk along the shore in a coastal town which has experienced de-industrialisation and comment on the atmosphere they sense today.

Analysing the meaning of a place is complicated and creates challenges for fieldwork. But if we are to truly engage with places, it could be argued that researching their meaning is essential. Therefore, we need to work on how to make fieldwork methods more meaningful as well. Video ethnography is one creative way to help students unpack a deeper meaning of place. | **TG** 

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#### Reviews

Reviews

Reviews of new geography resources.



#### BOOK

Geography Education's Potential and the Capability Approach: GeoCapabilities and Schools Richard Bustin | ISBN: 978-3-030-25642-5 Hardcover: £64.99 Ebook: £51.99 (incl VAT) Palgrave Macmillan

In this superb book, Bustin introduces the kind of framework that might be of use to geography teachers looking to theorise their own approaches to curriculum development. He draws on three broad theoretical traditions.

The first is the social realist tradition in the sociology of education, and the work of Michael Young on the importance of powerful knowledge. This is subjectspecific knowledge that has a particular explanatory power, that enables young people to see, understand and explain the world in a manner that they would not have had they not been educated in a particular mode of disciplinary thought.

The second tradition positions teachers as curriculum-makers responsible for making choices about what to teach, how and why to teach it in ways that are of interest and utility to the young people in their classrooms. This tradition, derived from the work of David Lambert and John Morgan, argues for the role of teachers in mediating between students, subjects, and school contexts. Finally, he draws on Amartya Sen's and Martha Nussbaum's work around a capabilities approach to social development. This argues that personal and collective development is achieved by developing the capability set of each individual. As Bustin suggests, 'a capabilities approach ... can offer a means of expressing what freedoms an education allows a person to "be" or to "do".'

These three theoretical traditions have much to offer geography teachers. By reviewing the progress of research into GeoCapabilities - an approach to curriculum-making built around the importance of powerful geographical knowledge and the contribution it can make to fostering the 'capability set' of young people - Bustin has made a major contribution to curriculum thinking in our subject. He argues that subjectspecialist teachers have an important role to play in developing a curriculum, wherein 'studying geography is about learning to think like a geographer, understand how geographical knowledge is created, debated and argued over and not simply about learning geographical facts.'

Bustin's book is conceptual, but in a manner that is directly of use to practising teachers. It is to be hoped that the GeoCapabilities approach inspires further research and discussion across the geography education community.

Daniel Whittall is Personal progress tutor at Trinity Sixth Form Academy, Halifax

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