Teaching Geography

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Writing for Teaching Geography

Teaching Geography provides a forum for sharing:

- practical strategies for teaching geography
- critical reflection on geography teaching and learning
- curriculum innovation and change in geography.

If you have a teaching strategy, practical idea, resource to share or particular view on educational practice, we would like to hear from you.

Teaching Geography welcomes articles from PGCE students, NQTs and practicing teachers. If you have an idea but have never submitted an article before and would like some advice, please contact Melanie Norman (*mj.norman@brighton.ac.uk*), the Editor of Teaching Geography, who will be happy to discuss it with you.

We welcome the submission of these types of article:

1. Geographical concepts articles critically discuss and illustrate approaches to teaching geography or current educational views and how they impact on geography.

2. The G-Factor articles (supported by online resources) are based around a practical idea for teaching one or a sequence of lessons.

3. How to... articles provide practical advice and strategies for geography departments.

4. Spotlight articles provide specialist subject information and propose approaches for teaching these topics.

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Geographical Association

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Contents

Editorial

Editor **Melanie Norman** introduces this issue of *Teaching Geography*.

Geography *really* matters!

Gill Miller explains why geography really matters in the modern world and outlines four challenges facing the subject.

Techniques for mentors to support early career teachers' reflective practice 53

Emma Rawlings Smith sets out her understanding of reflective practice and outlines some techniques for mentors to use.

'Holding the line': a case study of the physical geography and coastal management of the Fylde coast 56

Adam Corbridge and Duncan Hawley highlight how careful study of physical geography has influenced the revision of coastal defences on the Fylde Coast.

Can engaging teaching survive the knowledge revolution?

Christine Holbrey and **Lydia Parkhurst** share a trainee teacher's attempts to engage and motivate a large, mixed-ability GCSE geography group by using active learning strategies.

Getting outside! Investigating the school environment

Kelly Peppin introduces her year 7 students to their new school environment with a valuable fieldwork experience in the school and its grounds.

Teaching geography in the great outdoors

Lisa Conlan describes how achieving the GA's Secondary Geography Quality Mark led to participating in the John Muir Award and strengthening her students' interest in geography.

Illuminating places

Denise Freeman returns to the three lamps model for exploring place and applies it to a case study of Malawi.

49

50

Prisoners of Geography? How contextualising a book can develop students' understanding of geography.

Sarah Trolley describes how she used geographical and historical contexts to enable her students to critically evaluate *Prisoners of Geography*.

DRY (Drought Risk and You) research project

Gemma Mawdsley describes the DRY research project and the teaching resources that have been developed from it.

From the archive: Initial Teacher Education (ITE) – then and now

Melanie Norman reviews ITE issues raised in 1993 and compares them to the current situation.

'Challenge moments' in geography lessons: promoting critical thinking 82

Alex Booth describes a strategy he has used to help students develop robust conceptual understandings.

Reviews

59

62

65

68

Reviews of new geography resources.



Cover image: Mary's Shell, Cleveley's Beach. Find out more at: https://www.visitcleveleys.co. uk/about/seafront/marys-shellon-cleveleys-beach/ **Source:** © visitFyldeCoast.info



Accompanying online materials

For articles with this symbol, go to http://www. geography.org.uk/journals and click on *Teaching Geography*. Select Summer 2020 from the drop down menu and you will find the additional resources for these articles if you scroll to the bottom of the page.





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Teaching Geography Volume 45 Number 2

Summer 2020

72

75

79

84



Geography really matters! (see page 50)



Coastal management on the Fylde Coast (see page 56)



DRY (Drought Risk and You) (see page 75)

The code below links to Teaching Geography online





GA Annual Conference and Exhibition 2021

University of Surrey Thursday 8 – Saturday 10 April 2021

Compassionate geographies

t gives me great pleasure to announce the theme of the GA Conference for 2021: Compassionate geographies. Geographers are compassionate about the planet and all who inhabit it. The conference theme of also encompasses all the GA stands for – compassion in supporting and challenging geographical learning, with a view to a better

Get involved

If you're interested in proposing a session for inclusion in the Conference programme please e-mail Harriet Brookes (hbrookes@geography.org.uk) before the end of August 2020.



understanding of the world and its people. Compassion works at numerous levels across a high-quality geography education:

- The geography education community has compassion for all its members. Participating in this community, through support and collaboration, ensures every member of the community find their professional voice.
- Our community cares greatly about the

quality of geography education for young people. We care about the accuracy of the learning we share with them and each other, the quality of our teaching, and so on.

Our 2021 Conference will be an opportunity to celebrate and share our compassion to excite and inspire meet our learners in geography.

Dr Susan Pike GA Senior Vice President 2019–2020

NEW Geography from home Geographical Association

The GA's **Geography from home** page is the perfect way for school students, parents and carers to access geographical ideas and activities from home. Teachers will also find resources here for setting remote work for their students.

- Learn more about the geography of the coronavirus pandemic
- Improve your knowledge of the world using the GA's WorldWise quizzes and activities
- Learn to look a little differently at your surroundings, using a geographer's toolkit!



www.geography.org.uk/geography-from-home

Editorial

As is usual for my editorial for the summer issue of Teaching Geography, I reflect on the GA annual conference held in April of each year. However, there was nothing usual about the GA 2020 Conference. Due to the government-imposed lockdown in an attempt to control the spread of COVID-19, the 'live' conference was replaced with a virtual conference. The highly successful eConference generated the usual array of excellent presentations with people safely linking into sessions from their own homes. Access to sessions not 'attended' was made available via the GA website. Congratulations to everyone involved in putting together the eConference. Several presenters have been approached for articles based on their sessions which will appear in future issues of Teaching Geography.

Gill Miller's Presidential theme for her year of office, 2019-20, is 'Geography *really* matters!' In her article she says, 'It is geographical understanding of the environment, with its complex interconnected causes and stakeholders that enables us to tease out potential solutions'. A pertinent statement during this time of uncertainty. Gill urges everyone to 'ensure that recognition of the potential contribution of geography is spread more widely'.

In this time of lockdown Emma Rawlings Smith's comment that 'education is deeply social and cannot be isolated from the broader cultural influences of school and society' is apposite with teachers and students alike missing the daily engagement with school. When things return to normal, mentors supporting trainees and early career teachers will find Emma's article full of practical advice regarding reflective practice, based on a wealth of educational research.

Christine Holbrey's article links with an example of mentor support for a student teacher and also discusses the use of some of David Leat's excellent 'thinking skills activities' to develop student understanding of flood hydrographs.

If you are seeking good case study examples, Adam Corbridge and Duncan Hawley provide an up-to-date account of coastal management on the Fylde coast and Denise Freeman offers a case study on Malawi.

Kelly Peppin outlines her unit of work to engage year 7s with their new school environment through 'getting outside' and Lisa Conlan describes how her department's experience of gaining the Secondary Geography Quality Mark, led her to establish an extra curricular club that involves 'the great outdoors'.

Developing students' critical thinking is an important dimension of teaching geography. Alex Booth's article describes how he encourages his year 7s to think critically about a number of factors that can influence settlement site and situation by including what he calls 'challenge moments' within lessons. Sarah Trolley engages in a deep and illuminating discussion regarding the use of non-geographical texts with year 13 students, who in this case were reading *Prisoners of geography* by Tim Marshall.

Gemma Mawdsley writes about the DRY (Drought Risk and You) research project which includes a series of six lessons available on the GA website. A book that was produced from this project specifically for key stage 2 pupils, won a silver award, 'presented' at the recent GA eConference. This book could also be used with year 7 students.

Our 'From the archive' feature in this edition reviews the discussions that took place at GA meeting in 1993 regarding 'Issues and challenges for ITE in geography' and asks, 'Where are we now in 2020?'

I'd like to return to Gill Miller's article and her comment that 'geography really does matter - it contributes to the wellbeing of people of all ages, helping them to understand the issues facing our world and feel able to influence decision-makers'. Readers will no doubt be aware of the number of people who have been asked to read their favourite poems which contribute to personal wellbeing during lockdown. Simon Armitage, the Poet Laureate, did a geography degree and his first collection of poems was called Human Geography. I know poetry is not everyone's cup of tea and indeed my PGCE students once undertook some fieldwork with students from a partnership school where the mentor said 'I don't mind what they do with them as long as it doesn't include poetry' (sic). Eleanor Rawling gave me permission to include her poem as part of my editorial:

Newly Heard Sounds

The earth will remember, the earth will reclaim All that silence and quietness, we couldn't refrain From filling with noise and shouting in vain.

Will we look back and cherish the newly heard sound Of bird song, of wind race of moments we found, When our fast life had gone and the world was all changed.

Eleanor Rawling, 25 March 2020

Stay safe everyone and enjoy the sights and sounds that the situation has unlocked. As we all know even in these unreal times, 'Geography *really* matters'.

Melanie Norman Editor

The Editor introduces this issue of Teaching Geography.



Editor Dr Mel Norman on the South Downs near Beachy Head. **Photo:** Tony Norman.

Geography really matters!

Gill explains why geography **really** matters in the modern world and outlines four challenges facing the subject. Most of you reading *Teaching Geography* will be members of the Geographical Association and subscribe to its charitable mission 'to further geographical knowledge and understanding through education'. By implication, you recognise that geography really does matter – it contributes to the wellbeing of people of all ages, helping them to understand the issues facing our world and feel able to influence decision-makers.

Now and again it is valuable to step back and reflect on the centrality of geography to ourselves as informed and responsible citizens. There will be some point in each year when geography leaders in all schools have to justify their subject's curriculum time, staffing levels and funding share. As the curriculum gets more crowded and budgets get tighter, geography has come under pressure in all sectors of education. To ensure its status in schools we need to make sure its relevance and contribution outside the classroom are recognised.

As professional geography educators we have a crucial role in advocating for geography. We need to articulate its value in equipping students with the skills and confidence to manage endless flux in a world under all kinds of pressures. That then helps the case for geography in schools. How often do you hear the word 'geography' in the general press, news, magazines or media? Do those outside our geographical bubble appreciate its importance? Reactions to an article by Professor Danny Dorling (Dorling, 2019; Blunt and Evans, 2019) suggest not. If we are not proactive as a geography community in advocating for our subject, I fear no one else will do it for us.

Challenges

We face four areas of challenge:

- recognition in the wider community of geography's contribution to our development as individuals
- ensuring geography's position in school curricula
- public understanding of what geography is and why it matters
- acknowledgement by officials at all levels of government of geography's contribution to their areas of work.

Before we address these challenges, however, we need to articulate our own understanding of our subject. What is geography? What makes it so central to learning, so applicable to the world? What is it that makes geographers so employable? From early notions of geography as exploring the world, specialisms have evolved in the porous borders with other disciplines meteorology, hydrology, ecology, planning, demography; specialisms in development, culture, geopolitics, agriculture, etc. - all valid studies, increasing the depth and focus of the subject. No wonder geography has been called the 'mother of all sciences'. But what makes geography special is its holistic nature. We are the only discipline to draw together all these perspectives into a coherent understanding of people and environment, Earth and society, at local, regional, national and global scales. Uniquely, geography combines depth and breadth of knowledge and understanding with analytical and practical skills (Figure 1).



Figure 1: Geography provides us with practical and analytical skills. Photo: © Geographical Association/ John Lyon.

Geography's contribution to our development as individuals

Geography matters to us as individuals throughout our lives. We need to make sense of our place in the world; develop an awareness of the order and structure of our environment. We may take such awareness for granted, but it fundamentally makes us who we are. We find comfort and security in knowing places: think, for instance, of the opening sequence of *EastEnders*, the map of east London which since 1985 has grounded the programme in a sense of place for millions of viewers. There is so much geography in those three or four seconds! Viewers immediately 'place' the drama and absorb its identity. When we leave the classroom and travel, for holidays or work, it is our sense of place and space which helps us safely negotiate different communities. Geography enables us to manage and make sense of millions of pieces of powerful knowledge; it makes us curious, shows us awe and wonder, and in turn encourages us towards a sense of responsibility as guardians of our planet.

The place of geography in school curricula

When we teach geography, one of our bywords is 'exemplification'. We thrive on case studies – the application of concepts, theories and issues to the real world. The study of one aspect of a case study makes it incomplete; one example can illustrate numerous perspectives. Geographical case studies bring together places, people and issues, and exploring all aspects of an issue can lead to effective solutions. For geography is a problem-solving discipline. And in these 'posttruth' times (Biddulph, 2017) geography is well placed to help students evaluate the avalanches of data and information.

Public understanding of geography

The popularity of Michael Palin's travel programmes and David Attenborough's environmental documentaries testifies to our thirst for knowledge about the world. Of necessity, however, they present a simple, easily accessible message. The final programme of the BBC's Blue Planet II, on plastic pollution, is perhaps the most dramatic example, and its impact was nothing short of transformational. The message for our planet was stark and simple, and this presents the geography community with another challenge: environmental degradation is a complex problem, and resolving it requires knowledge and understanding. Seeing might be believing, but action emerges from understanding. It is geographical understanding of the environment, with its complex interconnected causes and stakeholders, that enables us to tease out potential solutions.

Environmental activist Chris Packham recently expressed dismay at the failure of environmental programmes to result in action to protect the environment. Film-makers have projected the awe and wonder of exotic environments and failed to show the damage we have caused them (Barkham, 2020). He acknowledges that *Blue Planet II* did result in action, and contends that we need more programmes highlighting the environmental damage we do. This feels like a call for greater public geographical awareness.

Influencing policy makers

We need decision-makers at a national level who can draw on geographical knowledge and understanding. In the UK we have learned from bitter experience how interacting with physical processes can produce some unwelcome results. Protecting the Holderness coastline led to increased erosion further south; River Severn flood alleviation schemes in Shrewsbury transferred the problem to communities downstream. Geography's holistic analysis of these problems can help to build sustainable solutions. We cannot claim to save the world, but we can make significant contributions to knotty problems.

The global context

Geography really matters in a global context too. The interrelated themes of culture, borders and migration provide some good examples. The emergence of geographical work on borderlands (International Boundaries Research Unit (IBRU), n.d.) that emphasises spaces rather than boundaries and integrates physical landscape with cultural identity and economic reality, helps us understand why borders are often contested, and may lead to more flexible responses. Tim Marshall (2016) argues cogently how a lack of geographical knowledge and understanding has given rise to political unrest and even armed conflict. The colonial administrators who drew boundaries for new African nations along lines of latitude and longitude, irrespective of their cultural and physical geographies, have much to answer for.

Resource exploitation in the Arctic is another example. Neighbouring countries and oil and gas companies have been quick to stake their claims, and geopolitical tensions have arisen between the different stakeholders. Sustainable resource exploitation is crucial to mitigate the effects of climate change and the impact on local communities. With new opportunities for in-migration from troubled Middle Eastern countries (there are now two mosques in Iqaluit, Canada) the character of Arctic communities is changing, and there is a pressing need for holistic geographical analysis of these changes. While geographers do not have a crystal ball, geographical skills, understanding and problem-solving may go a long way towards pre-empting human and physical crises. The good news is that the value of geographic analysis has been recognized by some influential figures (Figure 2). We must ensure that recognition of the potential contribution of geography is spread more widely.

As geographers, especially in secondary schools, we have an opportunity, a responsibility even, to enable our students to be effective and responsible individuals. None of the decisions they make in their lives will be made in isolation. As such, the importance of geography cannot be underestimated. It is our role as a geography community to articulate this message. Have a look at the two downloadable posters on the GA website which aim to show what geography is about (Figure 3). They are not intended for use in a geography department, where we get the message already, but to be displayed to those outside our geography bubble. I hope you will make use of them. The study of geography is about more than just memorizing places on a map. It's about the complexity of the world. (President Barack Obama, National Geographic Bee broadcast, 2012).

Geography played a leading role in nearly every policy decision I was involved in as Secretary of State. Young Americans with an understanding of peoples, places and cultures have a clear advantage in today's rapidly changing global economy (Madeleine Albright, former US Secretary of State, 2011).

It is geography that applies common sense to the statistical hysteria of the climatologists. It is geography that brings global warming into context and applies the test of feasibility to whatever political priorities are deemed necessary. It is geography that explains why each of us is located where we are, in neighbourhood, nation, continent and planet, and how fragile might be that location. Without geography's instruction, we are in every sense lost – random robots who can only read and count. (Sir Simon Jenkins, The Guardian, 2017).

A number of GA volunteer groups are taking action to articulate that geography *really* matters. One classroom activity can be found on the GA website at www.geography.org.uk/Welsh-Special-Interest-Group. The idea is simply to encourage students, of any age, to think about what they are studying, how and why it is important, and then share it on a postcard – to a decision-maker, headteacher, school governor, local councillor, MP, planner or parent – with the message 'Geography really matters to me because ...' (Figure 4). Two postcard designs can be downloaded and printed on card.

Young people are standing up and being counted. What better example is there than Greta Thunberg? Her message is also simple, albeit on a complex topic – and the world is taking notice. Geography matters – physically, socially and morally, because through analysing and understanding inequality it can support pressure on stakeholders for change.



Figure 3: Downloadable posters from the GA.

Geography really matters!				
people migra volcanoe planning hurrican ood decision ma health informed of environmental of mitigation critical landscape susta towns of onecting hazards	tion & local security es & spaces aking § flooding citizens conflict responsibility water thinking villages anability global ons change places hale ener urban particular			
Geography <i>really</i> matters to me because				

Figure 4: One of two downloadable postcard templates that can be used for the suggested activity.

We too have a great message: Geography *really* matters! It's time we identified as proud to be geographers, and made our voices heard. | **TG**

GA President's

Lecture 2020 Gill Miller's lecture for the 2020 GA eConference is available to watch on YouTube at: https://www.youtube. com/watch?v=iM8nI6K nsZ0&t=3s

Gill Miller is Senior Lecturer Emerita at the University of Chester and President of the Geographical Association, 2019–20.

Email: g.miller@chester.ac.uk

52

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Blunt, A. and Evans, M. (2019) 'Geography degrees are preparing disadvantaged students for relevant careers', *Times Higher Education*, 14 December.

Dorling, D. (2019) 'Kindness: A new kind of rigour for British geographers', *Emotion, Space and Society*, 33: November, 100630. IBRU (n.d.) *Borderlines*. Available at www.dur.ac.uk/ibru. IBRU also produce numerous briefing sheets on different border controversies. Marshall, T. (2016) *Prisoners of Geography*. London: Elliott & Thompson.

Web resources

GA Magazine, no. 43, Autumn 2019

Primary poster available at: www.geography.org.uk/write/MediaUploads/Journals/GA_A3_poster_pullout_Primary-2.pdf Secondary poster available at: www.geography.org.uk/write/MediaUploads/Journals/GA_A3_poster_pullout_Secondary-2.pdf Postcard designs available at: www.geography.org.uk/Welsh-Special-Interest-Group

Techniques for mentors to support early career teachers' reflective practice

Through my involvement with school-based mentors and early career teachers I have found that what people understand by reflective practice varies considerably. While reflective practice is included in the Teachers' Standards (DfE, 2011) and the initial teacher training (ITT) Core Content Framework (DfE, 2019), many students starting a PGCE course struggle to understand exactly what reflective practice is, why it is important, and how to develop it. In this article I set out my understanding of reflective practice and suggest a few approaches mentors can use with their mentees to help them understand and develop reflective practice in the classroom.

The origins of reflective practice

The concept stems from the work of Dewey (1933, p. 17) who contrasts *routine action* with *reflective action* and suggests that reflection, or the process of in-depth focused attention, 'enables us to direct our actions with foresight'. Hargreaves and Page (2013) suggest that reflection falls into four categories, and involves looking back before moving on (Figure 1). As such, it allows teachers to be critical of their teaching, make sense of their classroom experiences and use this experience to inform future classroom practice.



This introspective analysis helps teachers articulate why they do what they do in the classroom, a process that can be illustrated using Gibb's (1988) reflective cycle (Figure 2). This encourages teachers to reflect on their classroom experiences to identify if interventions are needed to move practice on, which can trigger transformative learning.



According to Bolton and Delderfield (2018, p. 5) reflective practice is 'a state of mind, an ongoing attitude to life and work, the pearl grit in the oyster of practice and education'. Such a state of mind is best developed collaboratively: education is deeply social and cannot be isolated from the broader cultural influences of school and society. This is why the role of mentors is so central to helping early career teachers develop reflective practice. Mentors model good teaching and professionalism, provide a diverse, possibly challenging, experience and support mentees with their time, resources and advice. Mentors observe, question and discuss. This enables them to set appropriate developmental targets for their mentees, broaden their thinking, and encourage them to be self-evaluative and reflective in their teaching. At the heart of teaching is the subject itself; reflection should not be generic but should focus on the question Roberts (2003) would put at the centre of any enquiry-based lesson -'Where is the geography?'

Supporting reflective practice

Teachers engage in reflective practice every day as they make sense of the complexity and diversity of the classroom. Brookfield (2017) suggests that reflective practice becomes second nature, but the process of how this happens is difficult, almost impossible, to teach.

Emma Rawlings Smith

Emma sets out her understanding of reflective practice and outlines some techniques for mentors to use.

Figure 2: The reflective cycle. Source: Gibb (1988).

Schön (1983) suggests that expert teachers think and act 'in the moment' during a lesson and this 'reflection-in-action' draws on their experienced assessment of the situation. With less experience, novice teachers are more likely to carry out 'reflection-on-action' after the event. Whereas reflection-in-action is spontaneous, mentors can help student teachers reflect-on-action on a daily basis, during lesson debriefs.

The most powerful way for mentors to help student teachers to develop reflective practice is to model their own classroom experiences – when students did not learn what was intended, or a particular learning activity fell flat. Being able to visualise expert teachers' reflective processes can help the mentees change tack – rewriting a lesson sequence, or revising a case study which did not resonate with the class. It also demonstrates that even expert teachers do not always get it right.

Key techniques

The remainder of this article describes some successful mentoring techniques to encourage reflective practice.

Reflective sentence starters

These broad questions encourage positive, reflective discussions and closely connect with the Teachers' Standards (DfE, 2011):

- I know I have planned a good lesson when ...
- I know my lesson is well pitched when ...
- I know my lessons are inclusive when ...
- Effective rules in routines in my lessons include ...
- The characteristics of a good teacher include ...
- I build good relationships with my class by ...
- Effective methods for providing feedback include ...
- I address misconceptions effectively when ...
- I know I have made progress as a teacher when...

Reflective sentence starters are useful to guide conversations, when mentees are unsure quite what aspect of their teaching should be the focus and they are unfamiliar with the requirements for teachers' practice and conduct.

Critical conversations

Brookfield (2017) describes critical conversations as a method to uncover assumptions and consider multiple alternative perspectives. He suggests that participants in a conversation should take up the roles of storyteller and detective. The storyteller recalls a problem experience, dilemma or practice and the detective asks questions to reveal assumptions or explore alternative interpretations and collaboratively find a solution. Critical conversations can have focus by using Borton's Development Framework. which sets out three cue questions - What? So what? Now what? This simple practice is suitable to structure reflective journals, blogs and conversations. Driscoll (2007) expanded these cues as listed here:

What? (description)

- What happened?
- What was I trying to achieve?
- What did I/others see or do?
- What was I aware of or not aware of?
- What was good or bad about the experience?
- What was my reaction?

So what? (analysis and evaluation)

- So what were the impacts of my actions?
- So how did I feel at the time/ afterwards?
- So do I still feel troubled? If so why?
- So what did I learn from this?
- So how has my practice changed since?

Now what? (actions and next steps)

- Now what are the implications of this?
- Now how can I modify my future practice?
- Now what priorities do I have?
- Now what should I prepare before I do this again?
- Now where can I get more information or training?
- Now who has expertise and can model this for me

Learning conversations

These conversations tend to focus on the subject and on learning rather than teaching. This approach is not new. Roberts' (2003, p. 44) framework for geographical enquiry includes four stages (Figure 3), the last of which involves reflecting on learning. Broadening out her approach, we can use the following questions to initiate learning conversations:

- Were the geographical data used in the lesson contemporary and relevant?
- What geographical knowledge and/or skills have your students learned?
- How is students' conceptual understanding being developed?
- Does their geographical knowledge build on the last lesson or unit?
- Whose voices are not being heard in your classroom?
- What has been learned? How has it been learned?
- How is learning progressing your students' geographical thinking?
- How did you consider students' individual needs?
- How could your lesson be improved or further developed?
- What alternative approaches could you take if you repeated this lesson?
- What is the value of what has been learned?



Conclusion

Mentors rarely get time out of school for discussions with colleagues in HE, but it is important for mentors and university tutors to develop a shared understanding and approach to reflective practice in order for student teachers to have greater success (Ofsted, 2020). In this article I have set out what reflective practice looks like to me and some approaches to help mentees in conversation with their mentors to move beyond 'doing teaching' and unpack their pedagogical reasoning 'in order to show others what they know, how and why' (Loughran, 2019, p. 523). By drawing on theory and classroom practice and making the tacit process of reflective practice more visible, beginning teachers will, as Ofsted (2020) suggests, get a more coherent teacher training experience and develop the pedagogical reasoning skills which will allow them to continue the conversation about teaching and learning throughout their career. | **TG**

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Figure 3: A framework for learning through enquiry. Source: Roberts (2003), p. 44.

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Adam Corbridge and Duncan Hawley

Adam and Duncan highlight how careful study of physical geography has influenced the revision of coastal defences on the Fylde Coast.

'Holding the line': a case study of the physical geography and coastal management of the Fylde coast

'Holding the line' (HTL) is a phrase used in coastal management to describe a policy and strategy of keeping the coastline in its present position and stopping the sea from encroaching where it is not wanted.

On vulnerable stretches of coastline where HTL is important coastal management is a matter of understanding the specific locational processes at work (the coastal dynamics) and how different coastal defence options will respond to the physical conditions. Before deciding what defences to build, engineers study and model the range of wave and tidal conditions and how different defences will behave to predict how they will affect the natural processes along the coast (the coastal feedback loop). This is important because choosing the wrong coastal defence option can change the coastal dynamics and work against HTL. Recent work on the Fylde coast provides a useful illustration of this link between physical geography and coastal defence design.

What is at stake on the Fylde coast?

The Fylde peninsula is a low-lying coastal plain in north-west England bounded by the Irish Sea to the west, the River Wyre and its estuary to the east, Morecambe Bay to the north and the Ribble estuary to the south. Fleetwood sits at the northern tip of the shoreline, which extends southwards through Blackpool and on to Lytham at the mouth of the Ribble (Figure 1).

Managed by Blackpool and Wyre Borough Councils, the Fylde coast is probably best known as a tourist destination, with the famed Blackpool beach having a long history as a seaside leisure resource. The beaches along the entire 17.5km length of the Fylde coast are an important draw for tourists, with significant benefits for the local economy. Keeping the beaches in good order is important for retaining their sandy appeal.

Directly inland from the shoreline is a low-lying coastal plain less than 10m above sea level. When storms hit the coast more than 16,000 homes and much commercial property here are at risk from flooding. The area has been severely flooded twice in the last 100 years, and over the next 100 years the sea level is expected to rise by 60cm, making it important to update the sea defences on the Fylde coast in order to 'hold the line'.

The physical geography of the Fylde coast

a. Landforms

The coast is dominated by wide sandy beaches made up of two to four intertidal sand bars and troughs which migrate across the beach to the coastline. Each is up to 2m in height and depth, with ridges and runnels oriented slightly obligue to the coastline, and periodically intersected by cross-beach channels (Figure 2).



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Figure 2: Lidar map showing the changing pattern of linear bars and troughs on the beach at Cleveleys: a) 1999-2009, b) 2009-2010, c) 2010-2011. Source: Adapted from: Miles et al. (2012).

Figure 1: Location of the Fylde coast.

Northwards from Blackpool up to Fleetwood the proportion of shingle on the beaches increases. At the northern end of the peninsula, at Rossall Point, the sediment builds into a sand and gravel spit with a backshore sand dunes system. The sediment extends out north into Morecambe Bay as a tidal muddy sand flat off Fleetwood.

b. Wind direction

Wind directions vary along the Fylde coast, so there is no dominant prevailing wind direction (Figure 3). Westerly onshore winds blowing approximately perpendicular to the coastline account for just under one third, while northwesterly and south-easterly winds (which blow offshore) each account for one sixth of the winds along the Fylde coast.

c. Waves

Waves arriving at the coast are determined by the strength, direction and fetch of winds; accordingly the Fylde coast waves generally arrive from the west, although wave direction demonstrates a great deal of variability (Figure 4). Due to the sheltering effects of Ireland to the west, Wales to the south and the Isle of Man to the northwest, the maximum fetch is about 375km, resulting in relatively low mean wave heights of 0.6-1.5m. These are short-period waves, averaging between three and eight seconds between each wave and putting relatively small volumes of water onto the beach as they break. Wave heights can reach up to 3.0m during more energetic periods (about 5 % frequency). Storm waves over 3.0m in height are not common (less than 1 % frequency).

d. Tidal flows – flood and ebb

Along the coastline there is a spring tidal range of about 8m. The flood tide brings in water from the south, which pours north along the coast into Morecambe Bay. The ebb tide flows south and west out into the Irish Sea so the return tide is weaker, resulting in a northward residual tidal flow at a rate of 0.4–0.8 m/s. The stronger northward tidal current is an important driver of sediment movement.

e. Sediment budget, sediment drift and sediment mobility

The Fylde coast forms a sediment sub-cell (a closed system of sediment inputs and output) and at this scale sediment movement is in two directions. South of Blackpool the drift is southerly, while to the north there is net sediment transport along the coast towards Fleetwood. Modelling indicated a negative sediment budget towards Cleveleys, attributed to the lack of sediment supply from the south due to the long history of coastal protection at Blackpool's Golden Mile and increased northerly transport of material. Around Blackpool, the northerly rate of sediment transport is 25,000m3 per year increasing to approximately 134,000m3 per year near Rossall Point.

At littoral zone scale, during energetic conditions breaking waves form on the top of the sand bar ridges and shift sediment from the ridges into the runnels, which moves the ridges slowly towards





Figure 3: Cleveleys wind frequencey rose. Source: Global Wind Atlas (https:// globalwindatlas.info/)

the coastline. In turn, this sediment is moved longshore northwards in the runnels and through the intersecting channels by the tidal and waveinduced currents.

The process that drifts sediment along the Fylde coast is complex and does not conform readily to the 'standard' model of longshore drift.

Coastal defences in the past

'Hard engineering' has defended much of the Fylde coast for over 100 years. The previous update of sea defences northwards from Blackpool, in the 1980s, generally consisted of curved concrete sea walls (revetments) and wooden groynes along stretches of the beach. The curved sea walls were intended to reflect wave energy and the groynes to slow the northward drift of sand and shingle. Unfortunately, these strategies haven't worked as intended. High wave energy crashing into a curved sea wall scours at its base as it is reflected, taking beach material out to sea. This process is exaggerated on the Fylde coast where the ebb tide has a westward current away from the coastline, carrying sediment offshore. Figure 4: Inshore wave rose for the Fylde coast. **Source**: (H.R. Wallingford (2001). Wooden groynes also exaggerate beach erosion, particularly when the dominant wave direction is perpendicular to the shore, as on the Fylde coast. As water contained between groynes piles up it causes strong compensating flows seaward along the structures, leading to erosion of the beach and sand loss to deep water. This unnatural lowering of the beach level by erosion is not helpful, in three interconnected ways. First, as waves scour underneath the sea wall it begins to sink and break up, undermining the sea defences, so in storm conditions larger waves can overtop the sea wall. Second, a lower beach means wave energy impacts more directly on coastal defences, resulting in higher rates of erosion. Third, there is less beach for visitors, and since the finer sand has been swept away what is left has a much higher proportion of coarser gravel and shingle, which makes the beach less appealing.

How have the new defences been designed to respond to the physical geography of the Fylde coast?

Understanding what is causing the lowering of a beach, and how unnatural erosion can be minimised or eliminated, requires careful consideration of the tidal currents and waves that shift the sediment along the beach. A beach that holds its sediment creates shallower water resulting in waves losing some of their energy as they approach the coastline. Defences designed to work with natural processes in ways that build up a beach provide added protection to the coast: not just 'holding the line', but extending it.

In the north of the peninsula, where the altitude is only a few metres above sea level, the coastal defences built in the 1980s have been replaced by major schemes, at Cleveleys (completed 2010) Anchorsholme (2017), and Rossall (2018) (Figure 5).



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Figure 5: Coastal defences

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2017. Photo: © Wyre

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Visit Cleveleys, Visit Fleetwood and Live Blackpool websites have much information and images on the coastal defence schemes and the seafront, including archive images of flooding: www.visitcleveleys.co.uk/environment/coast-watchers

www.visitfleetwood.info/about/seafront/rossall-coastal-defence-scheme

www.liveblackpool.info/about/seafront/anchorsholme-coast-protection-scheme

Video drone flying north over Rossall beach showing construction of the new sea defences: https://youtu.be/sDAP2jDya3E

a. Stepped revetments

Blackpool rebuilt its Golden Mile sea front in the central area between the south and north piers in 2011. The curved concrete sea wall was replaced with a long, stepped revetment stretching down to the beach. The steps are designed to appeal to visitors as a place to sit and look over the beach or out to sea. However, their structural function is to dissipate wave energy as they approach at high water and in storm conditions. Further north on the peninsula, stepped revetments constructed well above the high-water level, and designed to look elegant, replace old upper wall defences.

b. Rock armour

On the northern defences a 50m-wide apron of huge rock boulders, each weighing 3–7 tonnes, has been placed at the base of the stepped revetment between the mean high-water level and the beach. These are designed to dissipate wave energy by turbulent flow through the spaces between the boulders during periods of high waver energy, limit abrasive action below high tide and prevent removal of sediment by reducing scouring at the base of the defences.

c. Rock groynes

Huge boulders were also used to build rock groynes at 100–130m intervals, each extending 75 metres across the beach (longer than the old wooden groynes they replaced). The design is ideally suited to the low-angle oblique drift conditions found on the Fylde coast as the rock groynes do not interrupt the pattern of wave and tidal currents that shift the sediment on to the nearshore but trap it between groynes on the foreshore. Their porous properties minimise any backwash scour, significantly slowing the rate of sediment erosion from the beach. The net effect is that the beach builds as a low-gradient sloping shelf that is practically parallel to the shoreline, adding extra protection to the defences.

Summary

Where stakes are high HTL is usually the preferred approach to coastal management. Study of the particular physical conditions and coastal dynamics at a specific location gives insight into how the processes conform to or vary from standard models, allowing the design of coastal defences to accommodate and complement the real physical system as observed so the HTL strategy is more likely to succeed. | **TG**

Can engaging teaching survive the knowledge revolution?

Teaching a good geography lesson has to be the aim of a good teacher, but what exactly does a good geography lesson look like? How can teachers make their lessons good? And who decides what is 'good'? (Bustin, 2017, p. 134)

Many within the education community have welcomed the recent 'knowledge' revolution, with a knowledge-based national curriculum and content-heavy revision to both GCSE and post-16 geography specifications. Roberts (2010), reflecting on her experiences of examining newly qualified teachers, raised concerns about teachers' work being overly defined by pedagogy, rather than subject knowledge, putting at risk the disciplinary integrity and rigour of school geography. Mitchell and Lambert (2015) urged us not to lose sight of the geographical knowledge, the 'what to teach'; otherwise there is a danger of the 'pedagogical adventure', with a focus on generic skill development or engagement, becoming the end goal. They emphasised the need for pedagogy, the 'how to teach', to be about 'accessing and developing worthwhile and meaningful knowledge to take the pupil beyond the knowledge gained in everyday life' (p. 375).

Unfortunately, the 'knowledge turn' has provided the impetus for some teachers to return to a didactic approach. Lambert (2017, p. 20) is heavily critical of this style of teaching, referring to the 'futility of rote learning' and reminding us that there are powerful, adventurous and active pedagogies which encourage geographical thinking, and at the same time value geographical knowledge and evoke intellectual effort. Recent research from the Education Endowment Foundation (EEF) (2019, p. 2) recommends metacognition: 'evidence suggests the use of metacognition strategies - which get pupils to think about their own learning - can be worth the equivalent of an additional +7 months' of progress when well used'.

To teach a good geography lesson we must understand the relationship between the learning activities and the knowledge being learnt, so students make sense of the geographical content and are able to transfer it to other contexts. This article shares trainee teacher Lydia's efforts to engage and motivate a large, fairly lively mixed ability group following the AQA GCSE specification. The learning objectives for the lesson were:

- to understand the key features of a basic flood hydrograph
- to analyse a flood hydrograph.

To achieve these Lydia adopted two thinking skills strategies– mapping from memory and living graphs – derived from David Leat's inspirational *Thinking Through Geography* (Leat, 1998).

Mapping from memory

Mapping from memory develops students' cognitive abilities by improving their visual literacy. Students worked in small, pre-determined, mixed ability groups and were given a range of resources including string, masking tape, poster paper, and sticky notes. One student at a time from each group spent 30 seconds outside the classroom studying the components of a flood hydrograph attached to the wall; then they had to relay this information verbally to the rest of their group who had two minutes to re-create the hydrograph, using the resources provided.

Each member of the group took a turn outside the classroom, which was 'policed' by the substantive class teacher to ensure no cheating took place and no mobile phones were used! Spirits in the class were high, but productive; students clearly enjoyed the novelty of the experience and, interestingly, began to differentiate for themselves and fellow students, aligning individuals in the group with different levels of information. Some groups split the hydrograph into sections for this purpose; others allocated specific types of information to individuals. At the beginning of the task Lydia presented a WAGOLL (What a good one looks like) to focus students' mental activity and help them process information accurately in terms of shape, scale and labels. As their strategies for information capture became more successful, the time students spent outside the classroom reduced.

Not all groups flourished; one group of four boys struggled with their self-confidence and were less coherent as a team. Rather than focus on their own efforts, they disengaged from the task and opted instead to copy from a neighbouring team. While this could be viewed as a successful strategy, perhaps more could have been done to emphasise the low-stakes competitive nature of the activity. Generally, students were noticeably encouraging of each other; they listened carefully and asked clarifying questions such as 'What is rainfall measured in?', 'Does the time lag start at the highest rainfall bar?' and 'How many hours from the start of the rainstorm was the peak flow?' Their exploratory talk clearly had a positive impact on their ability to create detailed and accurate reproductions of the hydrograph (Figure 1).

During the activity Lydia assumed a monitoring role, listening carefully to conversations and observing how the groups were getting on. She only interrupted to refocus attention where necessary and to manage the 30-second time slots outside the classroom. At the end of the exercise she marked the completed hydrographs, awarding points for correct replication of the key features.

Christine Holbrey and Lydia Parkhurst

This article shares a trainee teacher's attempts to engage and motivate a large, mixed-ability GCSE geography group by using active learning strategies.



Figure 1: Example of a student's hydrograph. Photo: © Christine Holbrey. Lydia used this debrief to reintroduce the first learning objective, 'to understand the key features of a basic flood hydrograph', and to reinforce students' understanding of the key components and their definitions.

While discussing the definitions of 'peak rainfall' and 'peak discharge' she asked:

- How long did the storm last?
- How much rain fell?
- What was the highest amount of rainfall and how is it measured?
- How many hours into the rainstorm was peak discharge?
- What was peak discharge?

Students gave accurate responses to the datastyle questions, demonstrating an understanding of the terms and their ability to interpret a hydrograph. The question 'Why is there only a little increase in discharge when the rainfall first starts?' led to further discussions about rain falling directly into the river channel, vegetation intercepting rainwater and water infiltrating the soil. 'Interception' and 'infiltration' were embedded as key geographical terminology in place of 'plants stopping water and 'rainfall sinking through the soil'.

Students appeared to understand that the 'rising limb' showed increasing flood water in the river, resulting in increased discharge, and when asked about soil saturation (not their terminology) were able to articulate that overland flow would increase. They were also able to infer that snowfall rather than rainfall might affect the dynamics, snow melt being a slower process of water entry into the river channel, and that frozen around would increase the amount of overland flow. They were less confident about how 'throughflow' and 'overland flow' would alter the shape of the rising limb, and would have benefited from an opportunity to compare different shaped graphs and apply their newfound reasoning.

The relationship between discharge, throughflow and overland flow were again reinforced during discussions on the 'falling limb', which also introduced the idea of 'baseflow' as the normal river discharge through groundwater seepage. Lydia provided a definition of 'lag time' and asked: 'Do you think rivers with shorter lag times will be prone to more or less flooding?' There was some debate about this; a number of students thought that the shorter the lag time, the more susceptible rivers are to flooding. Introducing the idea of flash flooding would have been useful here. Students did not appear to have a firm understanding of the complexity and interrelatedness of the factors at play in a drainage basin. For example, a large drainage basin usually results in a slower water transfer, as the water has much further to travel to reach the main channel; however a larger basin will receive more precipitation, so over time may result in a much higher river discharge, presenting a more serious flood risk.

While it might appear that the second lesson objective, 'to analyse a flood hydrograph' had been met, it could be argued that the wording of the objective put the emphasis on data response, rather than on deep thinking and geographical knowledge. A slight rephrasing – 'to analyse the factors affecting the shape of the flood hydrograph' – would perhaps have achieved a move away from the skills-based focus towards subject knowledge development, aligning with the GCSE AQA specification and paving the way for exploration of the impact of geology (rock type), relief (steepness of slopes), land use (urbanisation, deforestation and agriculture), drainage basin size and density.

Living graphs

To build on the feedback from the previous activity and secure students' subject knowledge Lydia moved on to a living graph exercise. This is an ingenious way of moving graphicacy beyond the traditional drawing and describing elements; giving graphs a real-life context helps normalise them, provides relevance and enables students to apply knowledge in a more exciting and challenging way.

Students were given a range of everyday statements relating to a UK flooding event, for example: 'Mrs Jones runs outside to take her washing in' and 'On her way to work Mrs Jones notices plastic bags, weeds and other rubbish in the low branches of the trees by the river'. Students had to decide where on the hydrograph each statement would best fit. Lydia reminded them that there was not always a definitive answer and that understanding would arise from their interpretation and reasoning for their choices. The statements were differentiated to enable access and stretch; more challenging statements, with numerous correct locations, required much greater interpretation.

Work continued in small mixed ability groups and students tackled the task with enthusiasm, appearing to thrive on the mystery of the challenge. More confident geographers supported weaker learners and little input or re-direction was required from the teacher (Lydia), who circulated the room, observing and listening to discussions. Teacher vigilance, and genuine interest in students' dialogue, is crucial: sometimes group work can lead to misconceptions being reinforced rather than rectified.

To conclude the exercise students shared their answers and considered the validity of their reasoning. Students now demonstrated a much greater understanding of the chronology of flooding and its impact on people, and they could make viable connections between the intensity of rainfall and an increased risk of flooding. Lydia used this as an opportunity to carefully interpose a number of questions relating to the shape of the flood hydrograph, and factors which might affect this, skilfully reintroducing the concepts of interception, infiltration, saturation, overland flow, throughflow and baseflow.

With a thorough, high-level debrief in the first activity, this reinforcement might not have been necessary. Nevertheless, Lydia took the opportunity to consolidate students' knowledge and extend their thinking about the complexities of the flood hydrograph. When asked about the impact of the common practice of paving over gardens for parking spaces students understood how urbanisation would encourage rapid water transfer and lead to flash flooding.

Lesson reflections and conclusions

During the lesson observation feedback with her school-based mentor Lydia reflected on her strengths in terms of organisation, engaging learning activities, WAGOLLs to support learning, positive relationships and pacy classroom management. She described how the chosen activities would promote collaborative and active learning, enabling students to build knowledge and understanding through social interaction. Her determination to adopt a more facilitative approach to learning, with an emphasis on problem solving, geographical thinking and reasoning, clearly showed that she had begun to think carefully about the nature of the tasks and their relationship to the learning objectives.

Asked about the geographical learning which took place during the lesson, Lydia referred to students' understanding of new geographical vocabulary, e.g. peak rainfall, peak discharge, lag time, etc., and their ability to locate these terms on a flood hydrograph. She suggested that the mapping from memory task had helped students to associate numerical data with rainfall and discharge. It also improved their cognitive understanding of the process of flooding, from the onset of the rainstorm to the river's return to normal levels of flow. Similarly, processing the information for the living graphs reduced the abstraction of the hydrograph. By constructing meaning from the graph, students were able to explore people's connection with place, reinforcing contextual understanding and geographical reasoning.

Collaborative talk also proved effective: by seeking clarification from their peers students were able to develop and consolidate their geographical thinking. Misconceptions and inaccuracies were challenged and rectified by intervention from Lydia, much of it during the planned debrief. These debrief sessions were heavily reliant on effective questioning to promote thinking skills, enabling students to build on their learning and develop a much greater conceptual understanding. This was most noticeable during class discussions about the impact of soil saturation, snow melt and urbanisation, during which students were able to express a much deeper understanding of the factors that cause flooding, the relationship between these factors and their impact on rainfall and discharge.

The mapping from memory and living graphs activities not only helped students' geographical learning but also improved their motivation and behaviour. The debrief sessions are crucial to challenge students' geographical thinking and should allow time for questioning about issues highlighted in student-to-student conversations. Pre-planned questions can also be useful to help consolidate geographical knowledge and support extending thinking.

There are numerous long established engaging ways, not least Leat (1998), of developing students' geographical knowledge and understanding. In the interest of great geography teaching and learning, I hope that Lydia continues to champion strategies endorsed by the Geographical Association and the Royal Geographical Society (with the Institute of British Geographers) on their respective websites, which promote critical thinking skills and the development of geographical subject knowledge. | **TG**

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Kelly Peppin

Kelly introduces her year 7 students to their new school environment with a valuable fieldwork experience in the school and its grounds.



Getting outside! Investigating the school environment

Fieldwork is a fundamental aspect of a geographical education. Since 2014 the presence of fieldwork in both the national curriculum and examination specifications has grown ever more prominent, emphasizing the contribution fieldwork can make in involving 'students in the act of observing and asking questions of, and in, the real world' (Kinder, 2018, p. 110). I believe there is no better way than fieldwork to spark a student's geographical curiosity – it's one of the main reasons I fell in love with the subject!

The sequence of lessons described here is part of our introductory scheme of work 'What is geography?' and is designed to introduce our year 7 cohort to the school, familiarise them with their environment and develop their spatial awareness. The lesson sequence requires students to 'collect, analyse and communicate a range of data gathered through experiences of fieldwork that deepen their understanding of geographical processes' (DfE, 2013). My aim is to engage our new geographers right from the start by harnessing their curiosity about their surroundings. Based in the school and school grounds, the lessons offer a worthwhile fieldwork experience without the financial and administrative pressures of organising an off-site educational visit. The sequence of six lessons follows the stages of the fieldwork enquiry outlined in Figure 1.



I begin the first lesson by introducing the students to the six stages outlined in Figure 1, followed by a card sort activity (Figure 2 – a larger version is available to download) to establish prior knowledge. The cards show the stages of a geographical enquiry - introduction, aims, location, risk assessment, data collection, data presentation, analysis, conclusion and evaluation - and I ask students to put the cards into the order they think a geographical fieldwork enquiry should follow. This is a great way to get students thinking about what is entailed in each stage of a fieldwork enquiry. Throughout this activity I encourage peer discussion, to develop students' literacy and group work skills and let them explore themselves whether the enquiry sequence is appropriate.

To set the scene for the fieldwork enquiry, I introduce the enquiry question 'Does the environment of our school vary?' – a fertile question, requiring students to consider what information they need to collect in order to prove or disprove it – and a brief discussion follows. The lesson concludes with groups of students considering the various risks (i.e. slips and trips) geographers need to be aware of when planning fieldwork and how they can be reduced or avoided (i.e. be careful and pay attention to where you are walking).



Analysis			
Geographers examine their results to understand and suggest reasons for relationships.			
Conclusion			
Geographers always need to reach a judgement or decision backed up by their results.			
Data collection			
Geographers collect information during a fieldtrip.			
Data presentation			
Geographers use the data collected at this point to create graphs and charts.			
Evaluation			
At the end of the investigation, geographers make judgements about the accuracy of their results and problems they had during their fieldwork.			
Hypothesis			
Before completing fieldwork, geographers make a prediction of what they believe the data will show.			
Introduction			
Geographers must always explain what they will be investigating.			
Location			
Geographers must choose their fieldwork location carefully. They do this by identifying the advantages and disadvantages of different places.			
Risk assessment			
Geographers need to identify potential risks of fieldwork that could cause harm to someone, and come up with a solution to manage that risk.			

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Figure 1: The six stages of the fieldwork enquiry process, adapted from Owen (2018).

Figure 2: Fieldwork card sort activity.

Data collection

The second lesson begins with an introduction to the concept of a bipolar survey, or environmental quality analysis. I give students a template (available to download) to be completed during their data collection. They are to complete it independently, selecting opposite factors associated with a scale score, i.e. +2 to -2. To ensure the factors are appropriate, students are asked to suggest pairs of opposites (i.e. no litter/litter, not smelly/smelly) on which to score the locations they plan to visit. These locations could be chosen for them, for the whole class to use, or offered as examples, allowing more able students the freedom to select their own.

For the main activity students visit their chosen locations within the school grounds, completing their bipolar survey along the way (Figure 3).

You could allow your class to visit their sites in small groups, telling them how long they have to collect their data before returning to class. The likelihood of a student getting lost or encountering other risks is small – another advantage of conducting fieldwork in the school grounds. Alternatively, to manage behaviour and ensure that the activity is inclusive of all students, you could conduct the enquiry as a class.

There is a high level of student engagement in the data collection. Many students take it very seriously, pointing out every little detail, whether positive (e.g. no graffiti) or negative (e.g. noisy). I often hear students comparing their current location to the last, suggesting reasons for their results or sharing their surprise when the results in a particular location were not what they expected.

Data presentation

In the next lesson I ask students how they could present the data collected; common responses include bar chart, line graph, etc. A brief discussion of the advantages and disadvantages of each ensues and then I introduce them to a radial graph, a more complex data presentation method which many are not familiar with. A number of students struggle, at first, to grasp the plotting of each data point onto their radial graph. However, with careful modelling, using a visualiser or completed example (available to download) and the use of a template, they are soon at ease with this method of presentation (Figure 4).

Analysis

Owen (2018, p. 42) defines analysis as 'selecting evidence that reveals connections, patterns or trends'. Typically, year 7 students have a limited understanding of how to analyse the data they have collected. To ensure they know how to complete this stage of the enquiry correctly I give them a structure strip (Figure 5) to scaffold their written analysis, describing patterns and suggesting reasons for their results.

At the end of the sequence of lessons, I assess student understanding using a range of question types requiring various levels of response, awarding higher marks to answers which meet criteria set out by command words such as 'describe' or 'explain'.

		Bipolar S	Survey R	ecording	Sheet	
High Quality	+2	+1	0	-1	-2	Low Quality
Beautig	h		AS	1	E	Ugly
Not		С	BD	A	£	Smelly
Natural		BC		ED	AO	Notival
Clear		ABC		£		Dirty
Large		AD	A	BE		Small
Q viet	D	c	AB	£		Noisy
Not	C	ABD		E		But
O rganise	9	ABC)c		E	Unorgani
Location key	Location o	n school :	site			Total score
A	CANTEEN (1)					
B	LALL RECEPTION (3)					
c	QUAD					(8)
D	LEARNING ZONE (5)					
E	TAT FT					(-11)

Figure 3: Example of a student's completed bipolar survey.



Figure 4: Student example of a completed radial graph.

Introduction	What did you investigate? I have been investigating
Paragraph 1: Best environment	Which location had the best environment? My results show that the area(s) with the best environment is (are)
	How do you know this?
	Suggest a reason. This is because
Paragraph 2: Worst environment	Which location had the worst environment? My results show that the area(s) with the worst environment is (are)
	How do you know this?
	Suggest a reason. This is because
Paragraph 3: Improvements	How could the worst environment be improved? I think we could improve the worst environment by
	Why do you think this will help? I believe this will help because
Conclusion: Summarise your results	Does the school environment vary? Overall, the school environment

Figure 5: Analysis structure strip.

Lesson evaluation and future considerations

After teaching this series of lessons for a few years, I have made some modifications. Initially, I provided the bipolar template and opposite factors (i.e. attractive/ugly), but this limited student curiosity and independence. Students now select their own opposite factors; this has increased their engagement with the data collection and personalised the enquiry.

Originally students used simple data presentation methods, such as bar graphs. However, after conducting a key stage 3 curriculum skills audit, I decided to embed a number of graphical skills referenced in various GCSE specifications. My aim was to increase the level of challenge and expose students to a broader range of graphical techniques, thus laying the foundations for students who would continue studying geography at key stage 4.

In future, when the students have completed their analysis, I would like to suggest that they include a summary of their findings and suggestions for improvements in a letter addressed to our Headteacher. This would add validity to their fieldwork, and their findings could be incorporated into school improvement plans, making the school environment better for everyone.

Conclusion

Applied fieldwork enquiries such as this provide valuable, real-world educational experiences beyond the classroom that some students may not have access to outside school. Introducing students to the six stages of a fieldwork enquiry at the start of year 7 gives them a set of skills to build on when completing a sustainability enquiry at the end of the year, as well as the confidence to independently carry out microclimate investigations in the school grounds in year 8. Whether students continue to study geography at key stage 4 or not, such fieldwork enquiries foster valuable generic skills – asking questions, collating evidence and drawing conclusions – as well as sparking curiosity about our world. | **TG**

accompanying this article are available to

Online resources

The resources

download. Go to www. geography.org.uk/ Journals/Teachinggeography and select Summer 2020.

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Teaching geography in the great outdoors

SGQM Award achievement

We won! The first school in Scotland to be awarded the Secondary Geography Quality Mark (SGQM) Award – what a thrill! We have had the certificate framed and proudly displayed in the corridor as a reminder every day of what we have achieved and what our students are capable of (Figure 1).

Preparing for our SGQM application was our focus for a year beforehand, and achieving it has renewed our enthusiasm for promoting geography and all that it has to offer. As Blake (2018) has noted, the Award is an opportunity for geography departments to ensure that the department's profile is more visible within the school.

The SGQM moderators' feedback made specific reference to the strength of our fieldwork:

Your fieldwork offering in particular is worthy of special mention for its range and variety and we certainly endorse your intention to enhance it still further, to raise the aspirations of your learners and secure their geographical understanding.'

Supported by this commendation, and the views of McGeown (2011), that one of the main characteristics of a successful geography department is a 'comprehensive extracurricular activities programme', and Rawlinson (2016), that geographers should promote all opportunities for students to work outside, I decided that fieldwork and extra-curricular geography would be the focus for the forthcoming year. To this end I established a John Muir Award Club.

Who was John Muir?

John Muir was a farmer, inventor, writer and conservationist. Born in Scotland in 1838, in 1849 his family emigrated to the USA, and he spent much of his life travelling the length and breadth of North America and beyond, exploring new landscapes, flora and fauna. His great objective was to preserve America's wildernesses, and he was instrumental in securing National Park status for the Yosemite Valley and the area around Mount Rainier (Collin, 2007). He died in Los Angeles in 1914. The John Muir Trust, a Scottish charity founded in 1983, continues his conservation efforts, and has set up the John Muir Award 'for people of all backgrounds - groups, individuals and families. It's non-competitive, inclusive and accessible' (www.johnmuirtrust.org/ john-muir-award). This makes it an ideal extra-curricular club for schools.

Lisa Conlan

Lisa describes how achieving the GA's Secondary Geography Quality Mark led to her department's participation in the John Muir Award, and strengthening her students' interest in geography.

Figure 1: Lasswade High School SGQM Awardees, 2018.



Purpose and progression

Field trips must always have a purpose, or goal, whether to extend knowledge or practise a skill, and should develop progressively (Widdowson. 2017). Widdowson continues to say that progression in fieldwork should be maintained, in the same way that it is throughout the geography curriculum. This is also a strength of the John Muir Award which is designed in such a way that purpose is built into its four challenges: discover; explore; conserve and share. Progression is implicit in the award scheme: the first three challenges require successively more in-depth activity; once one challenge is completed participants can work towards the next. Figure 2 sets out the preparatory lunchtime club sessions and the residential elements of our John Muir Award Club.

Lunchtime sessions

The creation of the ladybug homes was a great project; the students saw it through from design to siting the finished homes in the wild, which validated all their hard work.

The students' articles on environmental geography needed to adhere to these criteria:

- 1. Include a headline
- 2. Introduction the topic, facts, locations, your own experiences, your opinions
- 3. Threats to the environment you have chosen why is it important to conserve it?

- Practical conservation/protection ideas what we can do?
- 5. Include a photo and credit the website where you got the photo from.

Students wrote about honeybees, North Sea oil pollution, orangutans, ospreys, pollution and climate change and red squirrels. The articles all showed the development of students' ICT, research and reasoned judgement skills, together with an increased awareness of environmental threats and potential solutions. Being able to choose their own topic was motivating - their team work, enthusiasm and attendance at each lunchtime club were exemplary. In future I will use this style of activity more frequently in the classroom; personalisation and choice can certainly lead to in-depth collaboration and focused learning. Publishing the students' articles on the school's website brought all these areas of environmental geography to the attention of the wider school community.

The residential field trip

Geography was everywhere, all the time: the views we saw, the questions asked and answered, the sounds heard and the skills developed. On many of the walks we talked about a variety of geographical topics – renewable energy, footpath erosion, deforestation/afforestation, climate change and river erosion. The conversations were spontaneous, excited and thoughtful.

Day	Location	John Muir Award challenge	Activities
Fortnightly after- school club	School – Craft, design and technology department	Conserve	 Groups of students make wooden ladybug homes for the new garden at Queen's View, Loch Tummel
Fortnightly lunchtime club	School – ICT room	Conserve Share	 Individuals/pairs/groups write an article on an environmental geography topic and publish it on the school website
Day 1 (residential)	Dunkeld	Discover Explore	 Historical walking trail (blue plaques) Environmental Quality Index (EQI) of the High Street: worksheet
	The Hermitage	Explore Conserve	 Students create an artist's palette of colours of nature and identify items on palette Litter pick
	Pitlochry	Discover Explore	 Visit John Muir Trust Exhibition Centre Walk along River Tummel and Fish Ladder Dam
Day 2 (residential)	Loch Tummel	Conserve	 Queen's View: planting trees/creating bug hotel on wild flower meadow/hanging ladybug homes with Tay Forest Rangers Evening quiz focused on the historical walking trail of Dunkeld
Day 3 (residential)	Falls of Bruar	Explore Conserve	Walk Litter pick
Evening 4–5pm	School	Share	 Celebration evening for students to present their John Muir Award journey to parents/ carers Certificates awarded



Figure 3: Falls of Bruar, Perthshire **Source:** Flickr/Kit Carruthers

At other times the geography was practically focused, as when Tay Forest Rangers talked to groups of students about afforestation, land management and careers linked with geography, or when the EQI of Dunkeld's High Street developed fieldwork skills, or getting to grips with four- and six-figure grid references using local OS maps. The most powerful geographical teaching is when your students are surrounded by the topic; it becomes as natural as the nature we walked through (Figure 3).

Reflections

The John Muir Award Club is a great way to embed geographical skills and knowledge. Links can be made to many curriculum topics, either through specific activities within the Explore and Conserve challenges (for example, those listed in Figure 2) or through the skills that students are encouraged to develop. Running the John Muir Award Club has certainly been a bright spot in my teaching year. The most rewarding experience was the genuine interest in geography students developed during the residential field trip. In my career as a teacher never have I seen a group of students who were so totally passionate about everything they did and learned, and witnessing students from different year groups become firm friends was a joy.

The John Muir Award encourages staff and students to get outside and experience geography for real. This makes our subject come to life and can create a sense of wonder and deepen students' knowledge and understanding. Reflecting on the learning is an important part of the SGQM, and was embodied in the John Muir 'Share' presentation to parents and carers. The whole experience has encouraged me to ensure this extra-curricular club is an annual event. Last year four students achieved the John Muir Award; this year, the re-booted John Muir Award Club saw 20 students receive the Award – what a success!

Future plans

Next year I would like to continue to develop the students' knowledge and understanding of map reading, grid references and map orientation. I think there is a lot more scope for them to co-lead short sections of the walks, using OS map extracts (from digimapforschools.edina.ac.uk) and our grid referencing/scale tool, a recent purchase to help students with four- and six-figure grid referencing at both 1:25,000 and 1:50,000 OS map scales.

Running the John Muir Award has certainly reminded me why I love geography fieldwork and how geographical skills and knowledge can be taught spontaneously and enjoyably in the great outdoors. | **TG**

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More information about the John Muir award scheme can be found at www.johnmuirtrust.org/john-muir-award

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Denise Freeman

Illuminating places

Denise returns to the 'three lamps' model for exploring place and applies it to a case study of Malawi.



Accompanying online materials The three lamps model (Freeman and Morgan, 2014) suggested a way of teaching about places that weaves together the work of academic geographers and the lived experiences of students (Figure 1). After feedback on the original model, including a workshop at the 2019 GA Annual Conference, we have developed the approach to reflect recent work on the teaching of place and developments in the geography curriculum at post-16 level (DfE, 2014).

Adapting the three lamps model

The adaptations suggested during our 2019 GA conference workshop included representing the personal geographies of young people using an open window, through which the 'daylight' of their everyday experiences shines on the place being studied. The notion of a kaleidoscope was added to represent the postmodern tradition within geography, which recognises a multiplicity of ways of viewing places. It was also suggested that the model could be applied to studying a variety of geographical issues, not just places.

It could be argued that separating these three academic sub-traditions, neatly encapsulating each one by a lamp, is over-simplistic; each of these traditions draws upon ideas from various perspectives within the discipline, and often the lines between different paradigms are blurred. However, the lamps can be lit individually, together or in various combinations to reflect different perspectives, and the model provides a useful starting point for teachers to reflect upon how they teach about places. Combining the perspectives from the three lamps into a holistic view may be a welcome approach for those keen to widen the scope of place-based studies in the classroom. Rawling (2017) argues that place study in schools has often been too narrowly focused; that school geography has



tended to focus on traditional regional geography and failed to engage with more recent academic perspectives on place. Recent curriculum reforms are an opportunity for a broader approach to investigating place (Oakes, 2020; Rawling, 2018), and the lamps model can support these changes.

Lighting up places through powerful knowledge: a study of students investigating Malawi

Since the publication of our original article (Freeman and Morgan, 2014), interest in the nature of knowledge and how it should be taught has grown. There is a strong focus on encouraging teaching and learning that engages with 'powerful' subject knowledge; knowledge that takes students beyond their everyday knowledge of the world. Young et al. (2014) outline three possible future curriculum models, Futures 1, 2 and 3. Future 1 involves the 'transmission' of a given body of knowledge; Future 2 sees knowledge as socially constructed and contested, with students central to the process of constructing knowledge. In Future 3, students are exposed to powerful knowledge, taught by subject specialists; the roots of knowledge are explored, questioned and updated. The three lamps model supports this emphasis on disciplinary knowledge. The different academic perspectives illuminated by the lamps can introduce students to narratives of place outside their experience. In the example in Figure 2 (available to download) students undertake an investigation of Malawi. From a natural science/positivist perspective, they locate Malawi and map its physical environment, placing it in its regional and global context, and explore its climate, landscape and geomorphological challenges. Looking at it from a social science perspective, they consider Malawi's economic and social development and the processes that have shaped the nation, its colonial links with the UK and the post-colonial influences of transnational corporations (TNCs) and China, as well as Malawi's industrialisation and the exploitation of child labour. Shining the daylight of their own lived experience on Malawi, they think about what they know about the country, and how they know it. Finally, they explore Malawi from a humanistic perspective, using the video diary of a 16-year-old Malawian girl called Memory and photographs taken by a Malawi-born trainee teacher to represent two views of life in Malawi. They think about the sources of the information – who constructed it, and why.

The rich variety of geographical knowledge about Malawi that emerges from the investigation offers students a new way of thinking about other places. It offers them opportunities to explore auestions such as:

- What impact will manufacturing growth have on the local and global environment?
- How is the issue of child labour in the tobacco industry being addressed?
- Is there evidence of climate change affecting the landscape?
- Do wealthier nations have the right to sit in judgement on the industrialisation of poorer nations?

Investigating Malawi

Natural science/positivist perspective

- Mapping Malawi, Where is it located? Longitude and latitude. Landlocked. Mapping the region. What makes place distinct compared to other places in the region? How can we avoid presenting a
 - homogenizing view of Africa as all the same? Location and character of the three main cities. Blantyre as the main economic hub/core. Rural areas
 - Location and character of the three main cities, biantyre as the main economic hubicore, Rural areas can be seen as part of the economic periphery. Climate and natural landscape with a focus on Lake Malawi. How has this influenced the development of different parts of Malawi? Exploring links to the Great Rift Valley. How and why is the landscape changing? Is there evidence of impacts from climate change? What predictions have been made for a warmer future?
- Geomorphological challenges e.g. recent floods caused by Cyclone Idal (2019). How do these challenges affect different groups of people e.g. those living on 'marginal land'?

Postmodern perspective A plurality of views and ces are given

- manistic perspective Exploring a day in the life of a young person in rural Malawi, called
- Memory. How do students fr
- about Memory's life? Discussions of
- similarities and differences between their life and that of
- Memory. What aspects of her life are they most intrigued by?
- How might other people feel about her life'
- How is Malawi portrayed to others? Where can we find out about Malawi? What can we say about thes sources? What is missing? Whose voice ut these
- is missing? What altern ative views What alternative views are there of Malawi? Explore using a range of photographs including those taken by a Malawian, now living in England, who visited recently Malawi
- What perspective does this offer? Use of #nofilter sheet to explore the images.



Students own knowledge, the 'daylight' of lived experience:

- What do the students 'know' about this place? How do they 'know' this? In what context have they come across this place hefore?
- How can this knowledge be accesse built upon in the study of this place? sed, used and

Social science perspectives

- What is the economy of Malawi? Key industries. Exploration of sugar and tobacco industry, including the role of JTI (a tobacco
- TNC) and Salima Sugar (which has FDI from China).
- China). How economically and socially developed is this place? Assessment of key development indices including GDP and HDI. How are local people
- How are local people changing this in Malawi? Exploration of the Project Peanut Butter initiative. What are the impacts of past political regimes on the destance of the the development of the country? A look at the pre and postcolonial history of
- the country. How is this place connected to other place the UK (former colonial ruler; source of income
- from aid): China (source of much FDI)? Are there issues of social justice or corruption in the country? Discussions of country? Discussions of the complexities of child labour in the tobacco industry. How are these
- Industry. How are these issues being addressed? What may be the impacts of rapid population growth? Impacts of potential urban growth? Evaluation the potential
- Exploring the potential Americanisation of cities with the recent opening of two KFC restaurants.

Future 3 and students' lived experience

Young people are often 'active geographers' even if they aren't aware of it. They tend to be highly connected to other places via technology and some are very mobile, through migration or visiting family. This lived experience provides a context for their learning and is their point of reference when making sense of new knowledge. It can be argued that the powerful disciplinary knowledge advocated by Future 3 needs to build on the existing knowledge that students bring with them to geography lessons, so we must look for what Roberts (2013) calls 'powerful pedagogies'; pedagogies which enable students to make connections between what they know and what they could know. Such pedagogies should also help students to question what they know and correct misconceptions. There are also opportunities to make connections with academic geography, which recognises the geography of young people as part of the discipline (Hopkins, 2010; Maira and Soep, 2005). Studies in this area have explored how young people experience and understand place, and how their relationship with place shapes their culture and identity.

Figure 2: Applying the three lamps model to the GCSE case study of Malawi.

Drawing upon their everyday knowledge may help students to make stronger connections with the world around them; they may 'arrive at a deeper understanding of why place meaning really matters' (Oakes, 2020, p. 18). An example of a student's work showing a holistic study of Malawi is available to download.

#nofilter

Looking at photographs of Malawi found online, one of my students was convinced that they had been selectively 'filtered' because they presented such an attractive view. This prompted me to consider that as well as illuminating places from different perspectives, the lamps model could also be used to consider the different filters used to view places. We all have our own personal 'filter' through which we see the world, but we are also increasingly viewing the world through filters applied by technology, particularly smartphone technology. The student's comment suggests there is a degree of expectation when it comes to using filters; that it is the norm. This trend is something to explore with students and is an important part of any discussion relating to the representation of places.

While my GCSE class were studying Malawi we were hosting a trainee teacher who was born there, and he shared some photographs taken during a recent trip 'back there' (Figure 3). The students were asked to analyse the photographs critically and question their reliability and purpose (Figure 4).





Figure 3: Two photos of Malawi. Photos: © Peter Nkhoma.



The class also looked at a range of photographs of Malawi they found online and tried to identify any 'filters'. #nofilter is often trending on social media. These photo collections claim to be filter-free.

Conclusion

Recent debates about the role of powerful knowledge in the curriculum suggest that, with its potential for making links to academic geography, the three lamps model can give teachers another way of teaching place in the classroom, and discussing the model at the 2019 GA Conference gave Alun Morgan and myself useful ideas for further developing its application to place study. It also has the potential to combine students' lived experience into the development of subject-specific geographical knowledge and understanding. Revising Malawi with my GCSE group just before the corona virus epidemic closed schools, students were able to recall a lot of what they had studied and could make connections between their case study and different aspects of geography, suggesting they have developed a rich knowledge of the country and a strong sense of place rooted in the subject. | **TG**

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Figure 4: Asking questions about images of Malawi – an example of a student's work.

Online resources

Larger versions of Figures 2 and 4 are available to download. Go to www.geography. org.uk/Journals/ Teaching-geography and select 'Summer 2020'.

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Prisoners of Geography? How contextualising a book can develop students' understandings of geography

Sarah describes how she used geographical and historical contexts to enable her students to critically evaluate Prisoners of Geography.



Popular books that discuss geographical issues, like Hans Rosling's Factfulness (2018), Dharshini David's The Almighty Dollar (2018) and Tim Marshall's Prisoners of Geography (2015) are increasingly being used in geography lessons. Works such as these, although not written by geographers, enrich students' experiences of studying geography; they can reveal new layers of complexity and strengthen a student's 'sense of place'. The use of these texts in the classroom aligns with both school-wide 'literacy drives' as well as Dolan's (2019) call for developing students' 'geo-literacy'. Inspired by other geography teachers' use of these texts, I wanted to integrate them into my teaching. This article is an account of how I used Marshall's Prisoners of Geography when teaching year 13 students about 'Superpowers'. I wanted students to read and critically engage with Marshall's work (and the contested theories upon which some of its claims rest). I did this by situating Marshall's book and his sources in their wider intellectual and historical contexts. Through reading and critiquing Marshall's work, students' understandings of geography as a discipline (its history, methods and epistemology) seemed to improve.

Tim Marshall's Prisoners of Geography

Prisoners of Geography features on many sixth form geography reading lists; Marshall's work has also featured on the Royal Geographical Society's (RGS (with IBG)) 'Literacy Lowdown'. The book is a detailed commentary on many geopolitical issues, such as Russia's annexation of Crimea in 2014. To support his thesis he draws upon both historical examples - 'Russia as a concept dates back to the ninth century' (p. 14) - and current affairs. Marshall's prose is provocative and punchy, and his main claim - that international relations have been and continue to be shaped by geography is hard to dismiss. All of this makes Prisoners of Geography an excellent text to support students' studies. Nevertheless, as I finished reading it, I was left with an uneasy feeling. It struck me that some of the book's argument could be seen as environmentally deterministic; it seemed to suggest that people's hands are forced by the environments in which they find themselves. Marshall himself does acknowledge the contentious nature of his claims in the book's introduction (p. xv); even so, I was concerned that my students would think Marshall was presenting facts, not making an argument, about geopolitics. This concern led me to reconsider how I would present this text to my class. When I flicked to the

back of the book, I noticed a reference to a particular paper from 1904 (Mackinder, 1904). This reference formed the starting point for my approach to teaching with this text.

Mackinder and his complex legacy

Sir Halford Mackinder is often considered to be the 'Father of Geopolitics', and after more than a century his works remain influential. Mackinder distilled the arguments of his 1904 paper into the following dictum: 'Who rules East Europe commands the Heartland; who rules the Heartland commands the World-Island; who rules the World-Island commands the world' (Mackinder, 1919, p. 150).

The World-Island comprised the interlinked continents of Europe, Asia and Africa (Afro-Eurasia) – the largest, most populous, and richest of all possible land combinations. The offshore islands included the British Isles and the islands of Japan. The outlying islands included the continents of North America, South America, and Australia (Figure 1). The Heartland lay at the centre of the World-Island, stretching from the Volga to the Yangtze and from the Himalayas to the Arctic.

Mackinder's Heartland was the then Russian Empire, minus the Kamchatka Peninsula in the easternmost part of Russia. He claimed that the physical geography of 'the Heartland' made it a natural fortress, penetrable only via eastern Europe, and this made control of eastern Europe the key to world domination. Mackinder also suggested that, since the 'Columbian Epoch' (broadly, the era since the European 'discovery' of the Americas) had come to an end in the nineteenth century, the world's great powers would soon turn their attention to gaining control of strategically important territory (Kearns, 2010). Mackinder's theory undoubtedly reflects the era of its creation.

Scholars such as Kearns (2010) and Ó Tuathail (1992) have worked to situate Mackinder's writings in their original ideological and historical context. Mackinder was an imperialist; at the turn of the twentieth century, he – like many others – was concerned that the British Empire was in decline (Dodds and Sidaway, 2004). This fear was stoked by Britain's military setbacks in the Second Boer War (1899–1902) and nationalist challenges to colonial rule in Ireland, Egypt and India (Ó Tuathail, 1992) and exacerbated by reports that many workingage men in Britain were unfit to fight (Kearns, 2010), a continuation of an ongoing Victorian neurosis that became known as the 'Condition



Figure 1: Mackinder's Heartland theory. Source: Wikipedia

of England' question. Mackinder was particularly alarmed by developments in Russia, including the construction of railways with the capability to distribute fuel and food to the new Russian territories. Mackinder feared this could form the basis of a new land-power that Britain's empire was ill-equipped to withstand. Mackinder's theory can, therefore, be viewed as a warning to the British establishment (Kearns, 2010).

Mackinder's concerns were amplified by his belief that 'the English' were unique; through his work, he sought to protect their exceptionalism (Mackinder, 1925, p. 726). This view was bolstered by social Darwinism (races are biologically bound to compete for survival) and environmental determinism (people's environments determine their behaviour). These concepts were common currency in fin de siècle Britain. Mackinder thought that England's environment had facilitated the growth of justice, liberty and good government; moreover, he believed that the English should impart these characteristics to peoples whose own environments prevented them from 'naturally' developing similar institutions and customs (Kearns, 2004). Mackinder did acknowledge that people had some agency, but that 'in the long run nature reasserts her supremacy' (Mackinder, 1895, p. 375). This was not an unusual view at the time (although there were critics). Mackinder used his view of British exceptionalism to justify British imperialism.

Believing that there were no more 'blank spaces' to discover and describe, Mackinder called for a change in geography; he wanted the discipline to move away from description and towards 'geographical explanation' (Kearns, 2010). He linked his 'new geography' and the teaching of geography in British schools with securing the future of the British Empire (Kearns, 2004). He played an important role in the establishment of geography as a school subject and was a founding member of the Geographical Association. His theories were influential beyond his time and beyond the discipline of geography. Some of his ideas influenced the work of the German school of 'geopolitik', which in turn fed into the Nazi concept of 'lebensraum'. His work also shaped the United States' foreign policy during the Cold War; it helped form the 'domino theory' – the idea that if one country (e.g. Vietnam) fell to communism the surrounding countries would also fall – and the policy of containment. Debates about the origins and afterlife of Mackinder's theories are fascinating and fractious in equal measure.

Contextualising Prisoners of Geography

It was knowing about Mackinder's theories and the field of geopolitics that enabled me to question some of Marshall's claims. For example, because I was aware of the debate about environmental determinism and human agency, his remark that 'President Putin did not have much of a choice – he had to annex Crimea' jarred with me (Marshall, 2015, p. 16). Dombey (2015) contends that Marshall actually goes beyond Mackinder, setting out an even more deterministic version of geopolitics.

To enable my students to critique Marshall's work effectively, I had to ensure that they had secure knowledge about Mackinder and his world. I used a patchwork of different sources – extracts from the journal articles mentioned above, summaries of alternative views from Mackinder's time and brief biographies – to build my students' knowledge. To structure the layers of context that I wanted students to bring to their reading of *Prisoners of Geography*, I used a concentric circle diagram to allow students to 'place' Marshall and Mackinder into their different contexts (Figure 2). Without this knowledge, there was a risk that students would view Marshall's text as a 'silo of facts' about geopolitics, as opposed to a theory about geopolitics.

While teaching these lessons, I noticed that this knowledge enabled students to participate in an informed and meaningful manner in discussions about alternative 'futures' to the one offered by Marshall. Providing this context led to various other questions that students asked and answered: how have Marshall's arguments been shaped by Mackinder's theories? Does Marshall take Mackinder too far? Are Mackinder's theories still relevant today?



Figure 2: An example of student work using concentric rings to explore the context of *Prisoners of Geography*.

Disciplinary discussions

Initially, all I had aimed to do was equip students to approach Prisoners of Geography in a more informed manner. An unexpected consequence of this contextualisation was that it encouraged them to think about 'what' geography is and 'where' the discipline has come from. For example, Mackinder's assertion that the 'Columbian Epoch' had come to an end led students to discuss how geography's past is entwined with empire building. Another student noted that they had not previously thought 'that geography had a history'. Further to this, several students also said that they had previously thought of geography as 'neutral', but that this contextualisation had showed them how the discipline could be applied for political means, and that its purpose as a field of study has been and can be contested. Contextualising and critiquing Prisoners of

Geography, then, had provided students with a way into complex debates about geography's epistemology.

The process of contextualising Marshall's work shaped the way students approached the rest of the 'Superpowers' topic. When they encountered world systems theory, dependency theory and Rostow's model, some students began asking who created these theories, when they were created and what agendas could have informed them. Equipping students with the contextual knowledge that I brought to my own reading of Prisoners of Geography enabled them to see that authors put forward theories as well as facts, and use facts and theories to make arguments about our world. Ultimately, this knowledge challenged students' ideas about the discipline, allowed them to explore the history of geography and gave them an insight into how geographical knowledge can be constructed and contested. | TG

Online resources

Figure 2 is available to download. Go to www.geography.org.uk/ Journals/Teachinggeography and select Summer 2020.

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DRY (Drought Risk and You) research project

Gemma Mawdsley

Gemma describes the DRY research project and the teaching resources that have been developed from it.



Droughts and water shortages can have an impact on the environment, agriculture, business, infrastructure, society and culture, affecting all of us, so drought risk management strategies are vital. To develop an easy-to-use, evidencebased resource to support decision-making for UK drought risk management, in April 2014 the Natural Environment Research Council (NERC) funded the DRY (Drought Risk and You). This was a four-year research project, led by Professor Lindsey McEwen in the Centre for Water, Communities and Resilience at the University of the West of England, Bristol.

The project spanned seven river catchment areas reflecting the different hydrological, socioeconomic and cultural contexts in the UK (Figure 1).

Where previous studies have focused on mathematical modelling of drought risk, a key feature of the DRY project was to access data representing a number of perspectives – from statistics derived from a hydrological model to stories and images collected from people in a river catchment area – to build a picture of drought risk in the UK, its impacts and possible adaptive strategies. To this end, the project incorporated a two-way process for gathering and sharing knowledge about drought and water shortages. Researchers held workshops with communities in the seven catchments, gathering narratives which captured local knowledge. These memories and images of historical droughts provided context for



Figure 1: DRY's seven catchments, along north-west (wet) to southeast (dry) average annual rainfall gradients (1961–90). **Source:** Public sector information licensed under the Open Government Licence v1.0 (Met Office background average rainfall layer). Catchment boundary data owned by NERC – UK Centre for Ecology & Hydrology.

the predictive hydrological drought models being developed by the DRY team, which are presented as a series of digital stories on the DRY Utility website.

DRY also carried out a number of citizen science projects with local people, generating information about the impacts of drought on grassland, crops, trees and domestic water use and collecting stories about volunteers' experiences and knowledge of drought.

The research generated a plethora of fascinating stories of people's experiences of past drought events, and their thinking about how we might adapt to droughts in future. These are brought together in the DRY Utility website, an online portal for knowledge sharing. The DRY project was concerned to exploit the educational value of the research; engaging with 'live' research materials which will help young people to a better understanding of drought and water scarcity in the UK. The DRY research, therefore, and the wider NERC Drought and Water Scarcity research programme, About Drought, was shared with the Geographical Association so it could be re-contextualised as a series of six key stage 3 and 4 lessons and supporting resources. These are summarised below, and available to download in full from the GA website (see references and further reading below).

Lesson 1: Is drought a global phenomenon?

Learning objectives: to investigate myths about drought, particularly that it is a Global South phenomenon; to learn how drought affects the UK

Students begin by using the 'flat chat' critical thinking technique (Mawdsley, 2019) to explore their understanding of the term 'drought.' To identify any misconceptions students are asked to identify areas prone to drought on a world map. Then they are presented with a map to show the real extent of global drought risk and water stress, dispelling the myth that drought is a Global South phenomenon.

Using the DRY website, groups of students work independently on one of the seven catchment areas (Figure 1) to identify their key characteristics and land use trends, then disseminate their learning to the rest of the class. These presentations could be recorded, to collate a documentary on the catchment areas as background information for this series of lessons.

Lesson 2: UK drought 2010–12 – causes and effects

Learning objective: to investigate the causes and effects of the 2010–12 UK drought

A choropleth map showing the standardized precipitation index over the twelve months to

October 2010 is displayed, and students are asked to describe the trends. This is an opportunity to establish that this period bucks the general UK trend for relief rainfall and prevailing wind direction, rendering the west coast unusually drier than the east. Students are asked to make comparisons between this map and one for the twelve months to October 2011 (Figure 2).

Next, students read a journal article, 'The 2010– 2012 drought in England and Wales' (Kendon, Marsh, and Parry (2013)) highlighting the causes of the drought, and when they have sufficient relevant information produce a timeline for the event. To understand the human impacts of the drought they listen to two of the audio accounts on the DRY Utility resource website. The lesson concludes by considering the impact, following such an extended drought, of the volume of rainfall on hydrology and human activities.

Lesson 3: UK drought 2010–12 – responses

Learning objective: to investigate the responses to the drought by different sectors

Groups of students represent one of the affected sectors – agriculture and horticulture, business, health and wellbeing, amongst others – and storyboard their responses to the drought, then 'speed date' around the classroom to share their findings. Each group presents arguments for their sector's need for water being the most important.

To develop a deeper understanding of responses to drought, students read 'Water harvesting and recycling in soft fruits' (Atwood, 2013), which explores how harvested rainwater can be used to sustainably irrigate polytunnels.

Lesson 4: The 1976 heatwave and drought – was any of it good?

Learning objective: to investigate the impacts of the UK's 1976 heatwave and drought

The DRY Utility resource portal brings together fascinating stories about the impacts of the 1976 drought across the seven catchment areas. The stories highlight everyday impacts, from wonderful summer holidays with fabulous weather, to dirty nappies soaking in buckets until the mother could do her one daily wash, to those potato farmers who *could* irrigate their crops driving about in brand-new cars, and so on. These mixed responses, from significantly different catchments in terms of physical and human geography, enable students to synoptically evaluate the impacts of the 1976 drought.

The lesson begins with a question generator (available to download) to encourage questions about a photograph taken in 1976 (Figure 3).

In groups, students undertake a 'true for who' task, each taking a role (campsite owner, mother of a young baby, potato farmer) and explore their perceptions of the drought. In two bullet points they state whether the 1976 heatwave and drought were good for them or not, and why. They read out their statements to their groups and the remainder of the group has to guess their role. This will encourage empathy for, and greater understanding of the impacts on, the different sectors. In many cases, the drought had both positive and negative impacts, so once each group has completed the task all the 'potato farmers', for example, can compare their statements to see if their ideas were similar or different. To add another dimension, students can refer back to



Figure 2: Choropleth maps showing standardised precipitation data for the 12 months to October 2010 (left) and October 2011 (right). Source: UK Centre for Ecology & Hydrology

Figure 3: People queuing for water at a standpipe in 1976. Source: Hull Daily Mail, 5 July 2018.



their prior learning on the physical and human characteristics of catchment areas, and begin to consider the spatial aspect of the impacts and how influential demographics would have been on people's ability to cope with and adapt to the drought. They could listen to the Ebbw Vale account on the DRY Utility website's Story Bank in order to consider the economic impacts of such an event.

The lesson culminates in an extended writing task entitled 'The UK drought of 1976 – was it all good?'

Lesson 5: Drought in the UK – the future

Learning objective: to investigate how a drought in the future could affect students' lives

This lesson encourages students to really consider how a drought could affect them. They are asked to think about how old they will be in 2020, 2050 and 2080, and what they think they will be doing then, and storyboard their ideas. They study two sets of choropleth maps showing seasonal changes in average temperature (Figure 4) and list their potential impacts on water stress and drought in the UK.

A set of choropleth maps of UK vegetation species from the MaRIUS drought risk management project (also part of the UK Drought and Water Scarcity Research Programme, About Drought) is presented to the students. Their task is to consider, with reference to the maps, the impact of drought on different species. The global impact of future drought is also considered, linking back to the Lesson 1 conclusion that drought is not a Global South phenomenon.



Lesson 6: Changing our thinking about water resources

Learning objective: to explore how we can change the way we use water

During this lesson students investigate how efficiently water is used in their school. They employ fieldwork techniques of sampling, constructing surveys/questionnaires, and choosing appropriate graphical techniques to present and analyse their findings. Figure 4: Maps of seasonal changes in average temperature in the UK. Source: MaRIUS project. Using concepts developed by Grecksch and Lange (2019) students devise a water- and energy-saving campaign. They are encouraged to use the nine 'building blocks' identified as important to a successful campaign. They take it in turns to present to the class, then the class votes on which campaign should be taken to the School Council or Headteacher.

Final thoughts

This series of lessons incorporates a number of critical thinking techniques which will dispel myths and give students an insight into the impacts of past and future drought in the UK. Students can explore primary data collated by the DRY researchers and feel part of the process of its interpretation, acquiring a deeper level of knowledge and understanding of the issue of drought. All six lessons and associated handouts can be found on the GA website. | **TG**

Acknowledgments

The process of development of the resources was an iterative one and I'd like to thank Professor Lindsey McEwen and Dr Neil Phillips of the University of the West of England for their input from a DRY project perspective.

References and further reading

All websites last accessed 21/04/2020.

'All about drought' – all the lessons and resources mentioned in this article are available online from the GA at: www.geography.org.uk/All-About-Drought-Resources

Online resources

The teaching resources described in this article can be found on the GA website at: https://www. geography.org.uk/All-About-Drought-Resources

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Email: gemmalmawdsley@gmail. com About drought exemplar of research from the ENDOWS project (ENgaging diverse stakeholders and publics with outputs from the UK DrOught and Water Security). Information is available at https://aboutdrought.info/

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Drought Risk and You (DRY) project website:

- Digital narratives: http://dryproject.co.uk/resources/digital-narratives
- Citizen science projects: http://dryproject.co.uk/citizen-scientists-updates
- Audio accounts of drought 2011–12: https://dryutility.info/story-bank
- Drought Risk and You (DRY) project resources:
- DRY Utility information portal: www.dryutility.info
- Teaching resources: www.geography.org.uk/teaching-resources

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From the archive: Initial teacher education (ITE) – then and now

To celebrate the many years that Margaret Roberts has been associated with the GA Teacher Education Working Group (TEWG, now TESIG (Teacher Education Special Interest Group)) I looked back to see when the TEWG was first established. Margaret was a founder member, and although in October 2018 she decided to withdraw from the group after more than thirty years of service, I am happy to say she has agreed to remain a corresponding member.

Although I could find no record of the establishment of the TEWG, while trawling the GA archive I found a report of a 1993 TEWG conference entitled 'Issues and Challenges for ITE in Geography' (TEWG, 1993) which was a fascinating read. This article reviews the issues being discussed in 1993 and asks questions regarding the situation twenty-seven years later.

Brian Ellis (University of Warwick) chaired the conference; many of the participants are still wellknown names in the geography ITE community. They are listed below as they were identified in the conference report:

- Andrea Tapsfield, Ofsted
- Bill Marsden, Liverpool University
- Nick Foskett, Southampton University
- David Lambert, Ian Flintoff, Peter Hillman, London Institute of Education
- Margaret Roberts, University of Sheffield
- Jim Moore, Liverpool Institute of Higher Education.

The conference comprised primary and secondary phase workshops. Most of the people named above participated in the secondary workshops. Participants in the primary workshops are not named, but details of the primary sessions can be found in the full report. In his summary of the primary workshops Brian Ellis noted that they had identified

... a number of issues which should be drawn to the attention of the Geographical Association, in that they affect the future of geography teaching in the primary school. (p. 19)

As well as concerns about the impact on geography ITE of the recently introduced National Curriculum (NC), the conference raised concerns about the suggested changes to ITE in Circular 9/92 (DfE, 1992):

... schools should play a much larger part in ITT as full partners of higher education institutions (p. 2).

It goes on:

Schools will have a leading responsibility for training students to teach their specialist subjects, to assess pupils and to manage classes; and for supervising students and assessing their competence in these respects. HEIs will be responsible for ensuring that courses meet the requirements for academic validation, presenting courses for accreditation, awarding qualifications to successful students, and arranging student placements in more than one school. (p. 4, paragraph 14)

The impact of these changes is still being felt today.

Andrea Tapsfield opened the conference by outlining Ofsted's perspective on ITE after the 1992/93 round of inspections. Her session, 'The Developing Agenda: Challenges and Opportunities for ITE in geography', covered these topics:

- the quality of initial teacher training in geography
- the impact of the National Curriculum on initial teacher training
- partnerships for training.

It is interesting that Ofsted refers to 'initial teacher training' whereas the conference title uses the term 'initial teacher education'. A summary of Andrea's points on these three aspects can be seen in Figure 1 and her concluding remarks in Figure 2.

Melanie Norman

Melanie reviews ITE issues raised in 1993 and compares them to the current situation.



Figure 1: Summary of Andrea Tapsfield's points (pp. 1–3).

The quality of ITT in geography

- secondary PGCE courses 'generally good'
- primary phase training 'at least satisfactory'

The impact of the National Curriculum on initial training

- some HEIs allocate 'more time to geography in primary courses'
- most new teachers, both primary and secondary, 'feel comfortable with the National Curriculum in their specialist areas'
- assessment is 'repeatedly noted as a weak area of training ... basic understanding of formative and summative assessment techniques and marking are rarely well taught'
- there is only 'limited emphasis to cross-curricular skills and dimensions'.

Partnerships for Training

- Circular 9/92 requires 'all secondary courses to be school-based'
- 'the best geography providers have always worked closely with schools, particularly in curriculum development'
- 'schools involved in training partnerships see professional development as an important benefit'
- for many HEI geography tutors 'a major problem is the isolation the job can impose' as they are one-person departments. Every geography mentor should 'contributed to at least one "taught" session'
- a challenge for all partnerships is finding time for subject teachers and mentors to meet to 'agree the rational and approach they should adopt'

My comments today have been more optimistic for secondary than primary training in geography. I do not apologise for that. It reflects both the strength of subject specialism in schools and the development of the subject within teacher education. For secondary trainers, partnerships with schools offer both challenge and opportunity. Several schemes are established and some are operating well, with geographers in the forefront. I certainly would like to hope that these emerging partnerships are the seedbeds of future geography curriculum development in secondary schools.

For primary training, the revised criteria and the new proposals will bring changes. I hope that courses where geography is currently weak might be strengthened by the addition of specialist staff either in HEI or schools. If the opportunities are taken to include the subject in the new alternative routes it could lead to better coverage of the subject and improved depth of training. However, the future of geography appears to rest in the hands of course designers whether in HEI or schools. It could either be marginalised or grow in importance. There is much for geography teacher trainers to fight for. My main cause for optimism in primary training is the positive response to the GEST initiative which has revitalised primary geography in some quarters. The geographers who have been involved could provide the foundation for future developments under new ITT arrangements. (p. 5)

Figure 2: Andrea Tapsfield's conclusion (p. 5).

The secondary workshops comprised examples of PCGE courses from the London Institute of Education, the University of Sheffield, Liverpool Institute of Higher Education and the University of Southampton. These are the issues they identified (my emphases):

- Teachers are **reluctant to commit time to training**; they see their role as teaching children
- Reflective practice underpins ITT courses but is not an accepted practice in schools
- Schools exhibit a **limited range of teaching styles** – this may conflict with the concept of entitlement of experience that student teachers might have
- What mechanisms exist for 'failing' students?
- The resource transfer to schools means **fewer tutor visits**. What will be the consequence of this development?
- Need to retain the involvement of HEI in ITT to ensure teaching is recognised as a profession, and is supported in training by an informed perspective based on research
- How will geographical education be led if the role of HEIs disappears?

The workshops produced a number of recommendations:

- 1 **Coherence** between HEI and partner schools in terms of provision of experiences and shared philosophical perspective must be ensured through:
 - student entitlement, specified through minimum contact time with mentors and the range of student experiences
 - quality control systems in place to ensure experiences in one school match those in another.
- **2 Training** of school-based supervisors in the training of teachers and in the teaching of geography; also in the area of competence-based assessment.

- 3 Use of resources buying timetable time for mentors.
- 4 **Operational issues** the need for students to undertake fieldwork teaching with students. The need for the HEI base to retain a substantial range of teaching reference resources.
- 5 Partnership and Curriculum Development – with the demise of substantial INSET work and the decline of advisory services within LEAs there is a clear recommendation that the groups developing ITT curricula might well be an effective focus for wider curriculum development work in schools.

Where are we now?

If you are involved with teacher training via any route into teaching, the following questions (Figure 3) might form the basis for a dialogue between students training to teach, HEI departments involved with ITE and those responsible for training subject specialist geographers via school-based routes.

The most significant issue in today's secondary ITE provision would seem to relate to question 7 in Figure 3: Where does the specialist subject training fit into the various training routes?

- 1 Are teachers reluctant to commit to teacher training?
- 2 Is there evidence of reflective practice in schools?
- 3 Is there a limited range of teaching styles in schools?
- 4 Are HEI tutor placement visits very limited?
- 5 Do you see your students teaching their specialist subject?
- 6 Is school-based training informed by evidence-based research?
- 7 Are school-based supervisors geography subject specialists?
- 8 Do students have opportunities for undertaking fieldwork with school students?
- **9** Are there opportunities for curriculum development?

Figure 3: Where are we now? What has changed?

Enquiry is an accepted approach to teaching in science subjects and history as well as geography. Planning activities that engage and motivate students is a requirement for all subjects. However, as David Lambert (2007) has said, teaching is not a 'pedagogic adventure'; it must be based on subject-specific knowledge and understanding. It is doubtful that this need is adequately addressed in the myriad of QTS routes, especially SCITTs, where there may only be one or two students who have geography as a subject specialism, though this is an issue for other subjects too. Andrea Tapsfield's research for the GA (2015) revealed:



Figure 4: Research on geography initial teacher education and teacher supply from the GA.

The evidence in geography ITE is that the amount of subject-specialist input is very variable. Some school-led partnerships rely heavily on generic training because they have not secured the expertise of an ITE geography leader. (p. 3)

The 2018 update (Tapsfield, 2018) (Figure 4) revealed little change:

... some providers, in both universities and SCITTs, continue to accredit School Direct training in geography without the oversight of a geography specialist. These schemes focus on generic training and rely on geography mentors having the capacity in terms of time and expertise, to provide trainees with a good grounding in subject-specific pedagogy it is a concern that such training may lack depth and scholarship and might fail to provide challenging training or encourage reflective practice. (pp. 2–3)

However, as Margaret Roberts (2010) points out, it is easy to see why geography lessons may not prioritise subject knowledge: only one of the eight Teachers' Standards (DfE, 2012) refers to subject knowledge. With this in mind, another question for discussion is whether it matters if the ITE curriculum places more importance on aspects of classroom practice rather than geography subject knowledge? | **TG**

Online resources

The 1993 TEWG conference report is available to download. Go to www.geography. org.uk/Journals/ Teaching-Geography and select Summer 2020

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Alex describes a strategy he has used to help students develop robust conceptual understandings.

'Challenge moments' in geography lessons: promoting critical thinking

One of my favourite year 7 lesson sequences is teaching about settlement site and situation. It aligns the core geographical concepts of place and the natural environment (Lambert, 2011), and understanding the factors that determine settlement situation is vital if students are to understand the relationship between the human and natural worlds. This article takes the settlement theme as an example to demonstrate a teaching and learning tool which I have called 'challenge moments', and which I have found invaluable to encourage geography students to think critically.

What do 'challenge moments' in geography look like?

It takes two lessons to orchestrate a 'challenge moment' on the theme of settlement situation. The first lesson, focussing on early settlements, introduces students to some of the factors that have determined where settlements are sited. Proximity to a supply of fresh water, for instance, is a positive factor, and its absence a negative; flat terrain is better for building and farming, whereas mountainous terrain is to be avoided.

The second lesson begins with a short 'recap', then all the settlement factors are displayed on the board, and students are tasked with writing down whether they are 'positive' or 'negative'. When they've finished, a show of hands indicates their answers. This is when I introduce the 'challenge moment'. Most students will recall from the previous lesson that proximity to fresh water and flat terrain constitute positive factors for siting a settlement; however, I inform them that this is not the case, that these are actually negative factors, and I challenge them to explain why.

When I first tried this activity I was astonished by the students' response. Before introducing the 'challenge moment' into my lessons, students would identify proximity to water simply as necessary for drinking and irrigating crops; subsequently, however, my 11-year-olds were pointing to the threats posed by flooding; contaminated water causing disease; the danger of over-reliance on particular water sources during droughts. These 'challenge moments' made space in the lesson for checking student assumptions and stimulating critical thinking, and transformed a simple activity, based on superficial knowledge recall, into one that stretched their understanding.

How can 'challenge moments' promote more dynamic learning?

It can be tempting to consider teaching and learning as a linear process, and a common approach to teaching subject themes, particularly by non-specialist or inexperienced teachers, is through representationalist pedagogies (Brandom, 2007). Students are presented with stimuli such as maps, pictures or statistics, and the lesson is intended to guide students through these representations towards an overall understanding of them (Crooks, 2017). In Figure 1, the dashed outline represents the thematic 'space' of the

Figure 1: Teaching and learning through representationalist pedagogies.



Teaching takes the form of introducing students to concepts, each intended to progress their understanding in a linear manner



Successful learning, as deemed by representationalist teaching

geographical theory or theme being taught; the dots within the box denote the various stimuli intended to guide students towards a linear understanding, and students are given reasons for linking the dots in a particular order. In the settlement example, a lesson may present stimuli that suggest proximity to water is a positive site factor, and provide the reason that access to water is vital for drinking and growing crops. In this style of teaching, providing they can reproduce the pathway learnt in class, students will develop an understanding of the subject themes predetermined by the teacher and their lesson activities.

However, despite dominating much of the discourse (Derry, 2016), representationalist pedagogies have a fundamental shortcoming. The linearity of thematic understanding, measuring success purely by faithful reproduction, marginalises the potential for students to make more dynamic conceptual links. If the sole purpose in teaching is for students to learn predetermined pathways intended to reproduce conceptual 'dots', their critical faculty is stifled; learning, rather than promoting understanding, becomes simply mechanistic. 'Challenge moments' are a counterbalance to this didactic style of teaching.

Inferentialism

I developed the notion of 'challenge moments' from reading Brandom's (1994) work on inferentialism. According to Derry (2016), inferentialism demonstrates how conceptual meaning is derived from an individual's written and verbal articulation of conceptual links. The introduction of novel learning contexts or situations means a student needs to rearticulate their established links, thus developing their understanding (Firth, 2017). This much more organic, and fluid, approach to student learning recognises the 'web of reasons' (Derry, 2016, p. 3) that constitute deeper student understanding (Figure 2). To revert to the settlement example, telling students that their assumed correct answer was wrong, and asking them to suggest why, encouraged them to challenge their pre-determined learning pathways. Their responses showed not only that the students were developing new ways to think about the ideas introduced in the previous lesson, but also that this approach generated a far more robust understanding of the topic.

'Challenge moments' to develop critical thinking

Principal among the benefits of introducing 'challenge moments' into geography lessons is their role in the development of critical thought (Brandom, 1994). Promoting critical awareness is vital to developing a more sophisticated understanding of geographical concepts (Roberts, 2015). It can help students to build alternative, more rounded perspectives, encourage them to challenge their assumptions, and integrate more empowering forms of learning in the geography classroom (Lambert, 2011). However, under the current English system, learning takes place almost exclusively within a linear framework (Firth, 2017). Consequently, wrong answers are presented purely in negative terms, to be avoided at all costs, and learning stops at the point at which students obtain the correct answer. As a result, students are unwilling to make, and test, their own learning assumptions - not necessarily through flaws in their understanding, but through a conditioned fear of getting the wrong answer (Brandom, 1994).

'Challenge moments' in geography lessons can look like failure. In fact, however, they provide the potential for liberation – a space to analyse the reasoning behind a student's thematic understanding, rather than dismissing it as right or wrong (Derry, 2016). The emphasis in learning should not be solely on the answers, but also on the thinking behind them (Firth, 2017).



Stimuli are introduced, with attempts made to establish reasons that link them.



There is not one 'correct pathway' towards student understanding. Successful learning is achieved by how well students can create and articulate their own 'web' of reasoning. **Figure 2:** Teaching and learning through inferential pedagogies.

The role of the teacher should be to challenge conceptual assumptions, moving the dialogue of teaching away from binary criteria of success or failure (Derry, 2016). Finding time in the curriculum to build criticality, with the current emphasis on acquiring knowledge, can be difficult (Firth, 2017); incorporating 'challenge moments' into lessons may offer a way of giving students a more rounded geography education. | **TG**

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Review

Review

BOOK

Reviews of new geography resources.



Hyper-Socialised: How Teachers Enact the Geography Curriculum in Late Capitalism David Mitchell | ISBN: 9781138339101 Hardback: £84.00 Paperback: £29.99 eBook: £19.49

This book is a welcome addition to the burgeoning literature into the nature of the geography curriculum, following on from a number of texts exploring similar themes over the past decade. The book is a scholarly piece, drawing from David Mitchell's extensive doctoral research and as such contains a multitude of well cited references that will be a welcome source of material for many years to come.

The book is in two main sections. The first is a more theoretical section unpicking some key ideas. The main one of these which underpins the book is that of 'curriculum making', which will be familiar to readers of *Teaching Geography*. Mitchell explores this model over historic timescales, looking at how the relationship between geographical knowledge, students, and teachers has changed over time. This is where he introduces the notion of 'late capitalism', the modern time when accountability, teaching to the test, and a relentless focus on measurable indicators has created a pressure for teachers and schools to 'perform'. This can have profound implications for geography teachers in schools.

Mitchell goes on to explore this in the second section of the book. Here he illustrates four

schools, each with their own individual pressures, and each with their own take on the nature of the geography curriculum. Teachers may well recognise themselves and their departments in these descriptions. From the charismatic head of department who seems to defy whole school policy, to those teachers who feel burdened by powers from above, each school has a unique relationship between geographical knowledge, students and the choices teachers make. The students in these schools experience geography in different ways. The final part of the book relates the vignettes of the departments back to the notion of the pressures of late capitalism on teachers' work.

The publication is clearly very timely, appearing as the perceived 'knowledge turn' in education is being felt more widely in schools and when teachers seem to be under a huge amount of pressure from a variety of sources. This book helps teachers to clarify their role as curriculum makers, balancing the needs of the student experience with geography as a school subject and the choices teachers make. The book shows how significant the role of the geography teacher is in helping students to understand the complex world and will be of interest and use to geography teacher educators, geography teachers, heads of department and school leaders.

Reviewer: Richard Bustin is Head of Geography at Lancing College and is a member of the Teaching Geography Editorial Board.

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