

Geography of health for key stage 3

George outlines reasons for teaching the geography of health and describes introducing a scheme of work on the topic for key stage 3.



Accompanying online materials

What is health geography?

Health geography seeks to understand the interactions between people and the environment in relation to wellbeing and disease. While closely aligned with epidemiology, it takes a holistic perspective, analysing the spatial patterns and socio-political contexts of, and for, health (Drummer, 2008).

Why teach it?

The COVID-19 pandemic has brought health geography to the forefront of all our minds. Sittner (2021) presented a convincing argument for teaching health geography in response to the current pandemic, using it as a topical case study. She also noted scope for embedding the geographies of health throughout a variety of topics, such as population, globalisation and development. While health could certainly be embedded throughout the curriculum, and there are a variety of case studies where the study of health is implicit within the teaching and learning, such as the spread of cholera after the Haiti 2010

earthquake, health geography could also be taught as a unit in its own right.

This article focuses on the concept of health, rather than disease alone, within which other topics can be critically analysed in context. While curriculum planning and development are in a constant state of flux, Roberts (1997, p. 35) suggests it must 'encompass the thinking and documentation that occurs before, during and after teaching and learning takes place'. The design of our 'Geography of health' scheme of work will be explained, including a discussion on teaching this unit, what went well and where we made changes, followed by a brief discussion of student views on the topic.

Designing the 'Geography of health' scheme of work

The original idea for a new topic began in early 2019, with a working title of 'Disease and health'. After undertaking some in-depth research (Curtis, 2016; Gatrell and Elliott, 2015; Raw *et al.* 2016; RGS-with IBG, 2012; Smith, 2005) we broadened

Figure 1: Current structure of enquiry questions and selected content in the 'Geography of health' scheme of work.

Lesson title	Selected content
1. How does geography relate to health?	Matching key terms to definitions – definition dominoes (see Figure 2 and download A). Diamond 9 task to evaluate factors influencing spread of disease (download B).
2. What are the diseases of affluence?	Consider the term 'diseases of affluence' and the extent to which this is appropriate. Then analyse the incidence of obesity and cancer using maps from WHO and explain the impacts on society/economy, using measures such as loss to economic output from illness, and how this might impact a country.
3. How does poverty relate to disease?	Analyse simplified version of the poverty trap in relation to small-scale gold mining in Ghana (see download C). Explore the link between poverty, small-scale gold mining and mercury exposure – link to students' knowledge of mercury from science to explain its impact on human health.
4. What is the geography of malaria?	Use Malaria Atlas Project (2019) illustrating malaria's path to eradication – give reasons for the trend. The role of physical and human factors in the distribution of malaria in Ethiopia (e.g. population movement, climate, altitude, stagnant water, irrigation, urbanisation). Produce an information poster on the geography of malaria (Figures 4 and 5).
5. What is the geography of Ebola?	Complete a 'preconception table' (i.e. two columns: 1. 'I think that ...', 2. 'I found that ...') in relation to: How do Ebola outbreaks start? How do they spread? What are the symptoms? Who is at risk? How is it treated?
6. How can disasters cause disease?	Diamond 9 ranking activity on the factors that increase the risk of disease after disasters (Figure 3). Read information on the Bangladesh 2019 floods and explain the spread of, and risk from, disease (download C).
7. How can human actions affect disease and health?	Use Malaria Atlas Project (2019) to explain how climate will impact on the spread of malaria. Use PM 2.5 diagram (see www.epa.gov/pm-pollution/particulate-matter-pm-basics) and other information to explore the impact of air pollution.
8. How can we manage disease to create a healthier population?	Presentation, with methods and brief explanation, to reduce spread of malaria (medicine, insecticide, draining stagnant water, mosquito nets). Rank them in order of effectiveness and justify ranking. Handout information on three SDGs (e.g. clean water and sanitation; good health and wellbeing; zero hunger) and in groups create a teaching poster on one of them.
9. What are pandemics and how are they managed?	Analysis of bird flu pandemic. Use Johns Hopkins University dashboard to analyse the spread of COVID-19.

the topic to include the wider management of disease and cover health and wellbeing. During a recent review of our key stage 3 geography curriculum, we decided to introduce a new topic for year 8 that became the ‘Geography of health’ (Figure 1). We were unaware at the time how dynamic the topic would become!

In the context of health geography, the scheme of work appears to focus on ‘medical geography’, narrowing to aetiology in lessons four and five. Despite the previous discussion on the need to broaden the scope, it is important to cover aetiology where needed, but the focus is on the contextual relationships between space, place and society. When deciding on the path this scheme of work was to take, it was easy to get drawn into writing a series of lessons on disease and how it is managed. From the student’s perspective this has the potential to become monotonous, decreasing intrinsic motivation (Deci *et al.*, 1981).

Teaching the ‘Geography of health’

We first taught this scheme of work in April 2020, under lockdown, through pre-recorded slideshow presentations, explaining the content and activities. There was an opportunity for students to ask questions via Google Classroom, through which they also submitted their work.

Successes

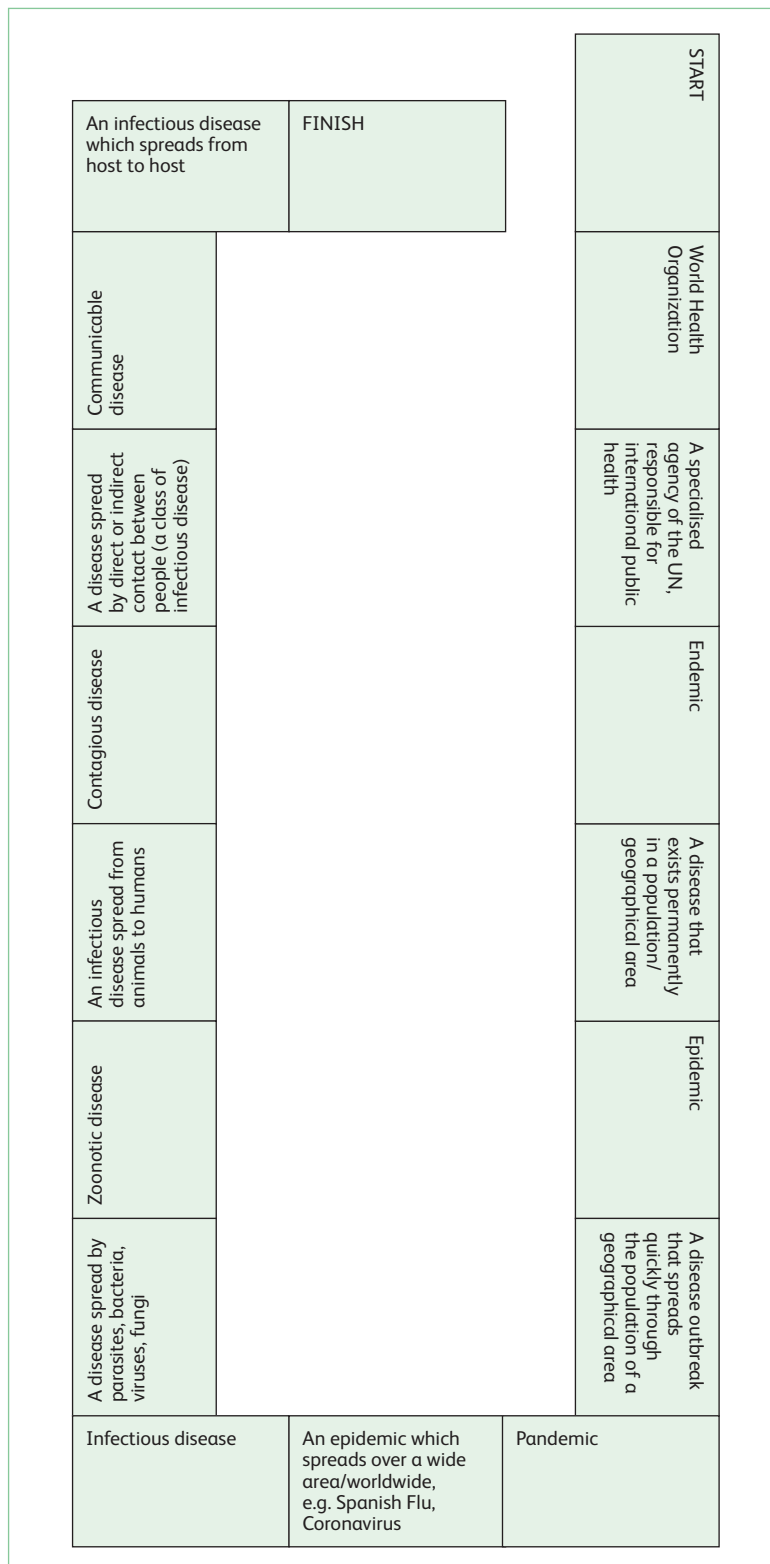
On starting this topic, it was useful for the students to note down what they knew about the concept of ‘geography and health’ and any links between the two. While this was a new topic, they were able to draw on their knowledge of other subjects in relation to health – an opportunity to correct any misunderstandings and to gauge their prior level of knowledge.

The start of the topic focused on key terms and their respective definitions. The use of definition dominoes (Figure 2), mentioned by Sittner (2021), worked well, enabling the students to use higher-order thinking skills. The key terms we focused on were:

- World Health Organization
- Endemic
- Pandemic
- Epidemic
- Zoonotic disease
- Infectious disease
- Contagious disease
- Communicable disease.

This is a short list, for two reasons. Firstly, these were the most common terms that would be revisited throughout the unit, building a strong foundation. Secondly, there was a need at the start of the topic to keep students’ intrinsic load small, to give scope to ensure they fully understood and could apply these terms.

The second and third lessons aimed to analyse two different ends of the spectrum of development. However, the term ‘diseases of affluence’ is not as clear-cut as it first appears. Student questioning on why it is not clear-cut is important, as it can clarify



misconceptions and also leads on to the reasons for the variations in certain non-communicable diseases, such as cancer. This dovetails into the relationship between poverty and disease and centres on analysing the reasons for poverty in Ghana, and engagement with small-scale gold mining as an attempt to escape poverty. While there is a plethora of key terms that apply to this section, they were placed as a ‘key term reference’ at the start of an article that the students read on the topic, and were kept to a minimum of three. At this point the concept of ‘health’, that had been assumed to apply solely to humans, expanded to analyse environmental health.

Figure 2: Definition dominoes as arranged by a student, remotely (see download A for the dominoes).

The focus of 'What is the geography of malaria?' was the role of physical and human factors in its distribution in Ethiopia. There was an opportunity to use GIS from the Malaria Atlas Project (2019) to help analyse both local and global distribution in relation to temperature. Clear direction to students about the specific steps to undertake in the use of this project, in addition to a brief explanation as to exactly what they were looking at, ensured a successful outcome. There was also the added benefit of students familiarising themselves with using GIS.

The lesson on 'How can disasters cause disease?' focused on the concept that disaster increases the risk of disease, but the former does not always cause the latter. The use of a diamond nine ranking activity allowed students to give their own view as to which factors were most and least important in disease risk, after analysing an example of flooding in Bangladesh. The ranking activity did not necessarily cover all of the factors illustrated in Figure 3, enabling students to draw on previous knowledge. It was a success: students gave well-argued justifications for their ranking, plus some well thought-through factors for 'their own idea'.

The lesson on how human actions can affect disease covered air pollution and the potential impact of climate change on the distribution of malaria. Lastly, disease management to create a healthier population focused on three sustainable development goals:

- Good health and well-being
- Clean water and sanitation
- Zero hunger.

The focus on these gave direction and purpose to the students' learning, whereas if we had taken a broad approach, it may not have allowed the opportunity for students to analyse specific goals in depth.

Reflection

We decided to omit Lesson 5 on Ebola and change Lesson 9 to two lessons, thus creating more time to explore the current pandemic. (The teaching resource on Ebola is available to download from the GA website.)

At the time of writing, Lesson 9 – an enquiry question on 'Disease X' and an activity on the management of the H1N1 pandemic in 2009 – was to be hypothetically applied to a future pandemic. However, this was altered to focus on the COVID-19 pandemic, using the Johns Hopkins University COVID-19 dashboard (JHU, 2021) to help students understand how the disease was distributed around the world. It also helped explain the social and political reasons for its variation between areas, as well as its impact on the environment in terms of pollution levels, around Wuhan and across the world. The students were engaged and focused on studying this topic, asking many questions that extended our own knowledge; we were learning together as the pandemic progressed.

Student views on the 'Geography of health'

Student feedback was overwhelmingly positive, on both the content and remote teaching. When asked why they enjoyed the unit, responses from students centred on the usefulness and relevance of the topic – this survey was undertaken in lockdown.

In April-May 2021 we surveyed the students studying the topic in the classroom for the first time. Over 90% of respondents stated they were enjoying the topic; the overarching reason given was that it was interesting. The students also gave reasons such as:

- 'It is interesting to learn about different parts of the world and relevant to what is happening.'

Figure 3: Diamond nine cards – factors increasing the risk of disease.

Lack of access to clean water	People forced from their homes to crowded camps	Quality of healthcare services in the country
A malnourished population before a disaster (are at higher risk of disease)	Lack of access to sanitation	Underlying health of the population
Availability of healthcare services throughout the country	Lack of power (affecting proper functioning of hospitals)	[Write your own idea]

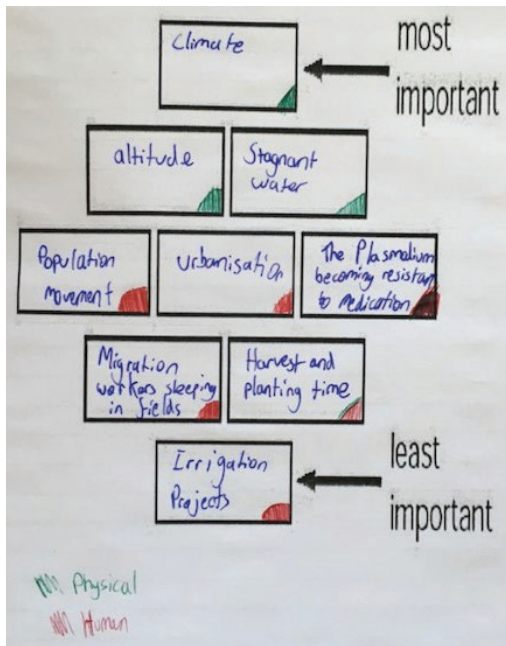


Figure 4: Student work on the assessment of physical and human factors that influence the distribution of malaria in Ethiopia.

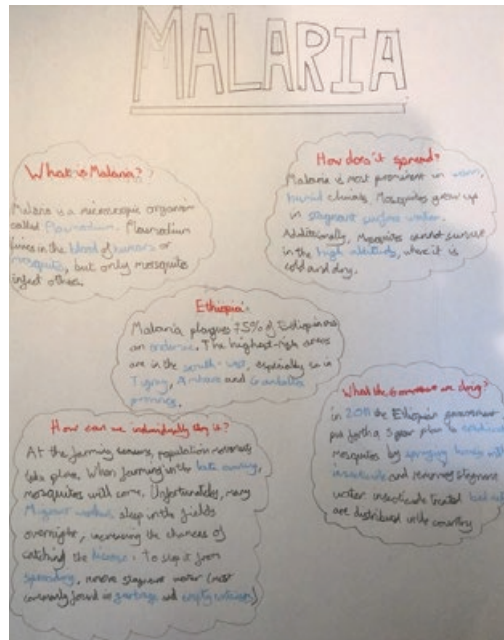


Figure 5: Malaria information poster produced by a student.

- 'It is important to understand why some diseases are more common in some places than others.'
- 'It is a different approach to geography than what we have previously done in lessons.'

In contrast, a minority of students noted that while they found the geography of health interesting, they preferred physical geography, such as the study of deserts, tropical rainforests and tectonics.

Students were particularly interested in studying 'What is the geography of malaria?' Figure 4 illustrates student work on the assessment of factors that influence the distribution of malaria in Ethiopia. The students then categorised these into human and physical, writing a short

justification. In addition, the students used information they had learnt, plus further research, to produce an information poster on malaria (Figure 5). This covered the physical and human geography of malaria.

Conclusion

The geography of health is a dynamic topic where other concepts and ideas can be interleaved and explored – climate change, sustainable development goals and air pollution, to name a few. In addition, the key terms covered in the first lesson were reinforced throughout the scheme of work. Studying the geography of health has an important part to play within the geography curriculum. | TG

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Online resources

To access downloads A, B and C please go to <https://www.geography.org.uk/Journals/Teaching-Geography> and select Autumn 2021.

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