

# Teaching about climate change: the perceptions and experiences of teachers

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## Abstract

This paper is an exploration into teachers' perceptions of raising climate change awareness among secondary students in England. The paper starts with the presentation of a summary concept framework of teachers' views on teaching about man-made climate change, based on previous research. This is followed by an exploration, into the views of four current teachers working in schools in England. This is based on four interviews. This interview data is presented to provide insights from teachers' voices, about teachers' understanding of, and attitude towards climate change education. The paper also specifically explores teachers' attitudes towards student activism. The conclusion reached is that teachers are aware of the importance of climate change education and supportive of student activism, possibly increasingly so, but find challenges with bringing this into the classroom. These challenges come from a pressurized curriculum and limited resources.

Keywords: human-made climate change; activism; school strikes; teacher voice; environment education

## Introduction

The past five years has witnessed a growth in youth movements related to human-made climate change - with the most visible and controversial aspects of these movements being school strikes for climate (Rainsford & Saunders, 2021). Youth leaders of these movements have

explicitly described a shift in leadership over climate change concerns moving from national leaders to the younger generation – those who will shape the world (Kowasch et al., 2021). Given the importance of addressing human-made climate change - education which aims at a profound, long-term understanding among younger generations is vital. This paper, on teachers' perceptions of raising climate change awareness among students, can provide insight for environmental organizations and individuals who would like to work with schools in raising environmental awareness. It can also be useful for educational leaders.

The research, for this paper, which was conducted with secondary teachers from England aims to answer four questions:

- How important do teachers think it is to raise climate change awareness among students?
- In which way do teachers feel empowered to raise climate change awareness among students?
- What are the difficulties teachers face, in raising climate change awareness among students?
- What are teachers' views on students taking classes off to participate in climate activism including strikes?

## **Conceptual framework**

Climate change education, in England, is largely considered to be an additional part of existing environmental education within science and geography as subject areas (Greer, King & Glackin, 2022). This is even though environmental education was introduced to the English

National Curriculum, as far back as 1990, as a cross-curricular theme (Hawkey, James and Tidmarsh, 2016). Currently schools in England have considerable freedom in pursuing the way they want to teach environmental education or education for sustainable development (in policy documents the words climate change education are not specifically used). However, for individual teachers working within rigid school policies this may be less so (Kurup, Levinson & Li, 2021). As this study reveals, a live, pragmatic debate exists within schools in England over whether human-made climate change should be taught within the sciences alone or more holistically across the entire school - including through a range of subjects and through additional activities (Greer et al., 2022).

### *Climate change awareness among teachers*

The majority of anglophone research into attitudes towards climate change education has been conducted in the USA (Plutzer & Hannah, 2018). This is despite the fact that man-made climate change is more consistently taught about in other systems (Liu & Roehrig, 2019). Previous research has discovered that teachers engaged in climate change education tend to fall into three perspectives. These categories create a useful typology. The first are those with a basic-facts approach and the second is those with an extended approach (Plutzer & Hannah, 2018). Both these types of teachers are positive about teaching about human-made climate change and feel confident doing so. However, the first tend to believe their responsibility is limited to giving scientific facts related to climate change, and its origins in human activity, in order to counter misconceptions students may access elsewhere, especially via social media (Vare, 2020). The other (extended approach) is to integrate critical thinking, and problem-solving skills through environmental projects, that are often cross-curricula, that help mitigate and adapt climate changes (Grady-Benson & Sarathy, 2016).

There is though a more problematic third category found in studies within the last decade. These are teachers who perceive that a neutral position, means avoiding explicitly advocating for the environment and who attempt to create balance by presenting climate change denialism as a valid alternative perspective (Ho & Seow, 2015). This teaching of a false-neutral position has been found to exist even though this is clearly not the scientific consensus and has not been so for several decades (Colston & Thomas, 2019). These teachers may themselves feel conflicted regarding their belief in human responsibility for climate change - and may be unsure regarding the purpose of climate change education (Colston & Vadjunec, 2015). This cognitive conflict has been found to lead to a significant number of disengaged teachers (Boon, 2016). Various studies have shown that when knowledge about human-made climate change is not well understood by teachers in a setting - then willingness to teach this topic can be very low (Boon, 2016; Herman, Feldman, & Vernaza-Hernandez, 2017).

Teachers, regardless of their understanding or beliefs also face multiple challenges when it comes to teaching about human-made climate change. External factors such as parents' reactions or opinions from the community can create hesitation among educators about teaching this topic. Pragmatically teachers have also reported finding it difficult to relate human-made climate change to other topics because they do not have enough information, and because of time and resource pressures (Vare, 2020).

Teaching about human-made climate change, despite the established scientific consensus, remains a surprisingly controversial topic - and a particularly under researched aspect has been teachers' attitudes toward students' involvement in climate change activism such as going on a strike or protest (Herman et al., 2017).

### ***Overview diagram***

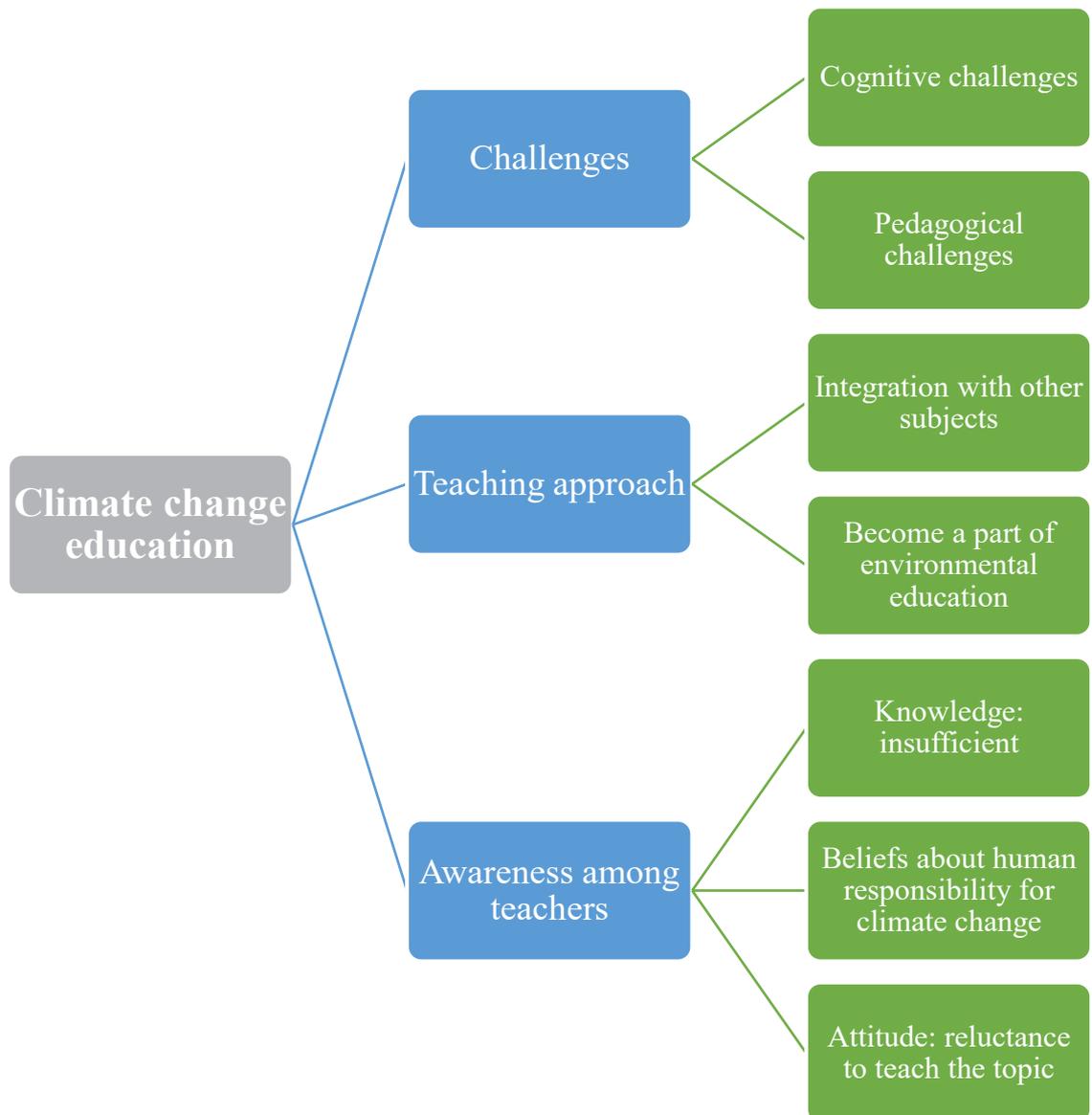


Figure 1. Overview of climate change education – challenges and debates

Informed by this framework (diagram above) - this paper accesses the voice of teachers in England to understand their strategies, beliefs, the difficulties they might face and how these relate specifically to the English education system. Furthermore, it explores what teaching approaches are suggested by teachers and whether they think human-made climate change education is important or not. To this extent this paper can be defined as emerging from a

interpretivist perspective – as its purpose is to elicit teachers’ individual perceptions and meaning making through teacher-voice (Rapley, 2018).

### **Conducting the interviews**

This paper is a report into the early stages of this research project. Specifically it reports on an initial scoping study in which four teachers were interviewed. Interviews were used rather than questionnaires – so as to enable a largely unstructured exploration into a previously under researched field (Silverman, 2014). Using interviews enabled subtle distinctions in viewpoint to emerge, and lastly use of interview positions this paper in the genre of teacher voice and teacher empowerment research (Frost, 2015). All four interviews were held in the middle of July 2022. Four participants were interviewed. The participants were (and are) secondary school teachers in the UK. They had at least 5 years teaching experience each and they teach different subjects. Their names have been changed in order to provide anonymity and their school’s name has not been used. Their teaching subject has been mentioned because their teaching background provides readers with a better context for understanding the answers that they gave.

- *Interview number 1: Fed – History teacher – 14 years of experience*
- *Interview number 2: Daniel – Business and Economics teacher – 20 years of experience*
- *Interview number 3: Ivy – Health and Social Care teacher – 5 years of experience*
- *Interview number 4: Sophia – Psychology and Sociology teacher – 6 years of experience*

All quotes are verbatim and have not been grammatically corrected.

### ***Ethical considerations***

This research has been conducted in accordance with BERA ethical guidelines (BERA, 2018). Voluntary participation and informed consent were of the utmost importance when conducting

the research. This was ensured throughout different phases of the study. At first, when participants were recruited for the research, an introductory email was sent to different teachers to invite them to participate in the study. The information exchange at this stage was done via email correspondence, enabling written consent from participants to be saved. During the study, all participants were informed that they could withdraw from the study anytime they wished. Before the interviews, participants were fully informed about the purpose of the study and their rights as a participant. A consent form was also sent to them prior to the interview. The transcript was also sent to them to double-check. This was also an opportunity for them to rethink what they said and make adjustments if they wished.

### **Findings: time resources and culture**

Evidence gained from the interviews showed that time is among the biggest and most obvious barriers teachers face that stops them from raising climate change awareness among students.

*I know that I wouldn't have time properly. I have to teach. I have thirteen different classes going on. I can do my bit, but I guess it's something that can be discussed among school leadership to talk about how we can bring in a little bit about climate change as a theme [...]*

*(Fed – History teacher)*

Besides time, lack of resources is another factor that interviewees described as an obstacle. limiting their school's efforts to raise climate change awareness.

*We need funding, you know, that actually inviting people, coming in, requires a coordinator to handle work [...] we need someone to have time to get in touch with*

*different people and organizations, companies to bring them into school [...] I think the factor stopping this can be money [...]*

*(Fed – History teacher)*

*Teachers are not meant to be the only person to teach you stuff, they are meant to guide you towards where you can find the information yourselves. So teachers should be supported to know the available resources like websites so that students can find the information. Teachers should know what is out there and how to direct students to the resources.*

*(Daniel – Business and Economics teacher)*

School culture was also identified as a reason that prevented effective climate change discourse among teachers and students.

*[...] I think it's having a consistent message. Quite a few know about climate change. I think most people have knowledge - but the most difficult part is to have a consistent message of what it is that we are trying to do, how are we going to do it and how are we going to implement it. So it is making sure that from the top there is a consistent message that runs around the school so the students know what the issues are [...]*

*(Sophia - Psychology and Sociology teacher)*

As this teacher acknowledges - many know about human-made climate change but knowing is different from acting towards addressing climate change. The consistency that she is seeking is presented by her in two dimensions: consistency between the teacher's knowledge and their

actions delivering the message to students and consistency among different parties inside the school, from the senior leadership to teachers and students.

***Findings: finding space to teach about climate change***

Integration across subjects was suggested by most of the interviewees. This approach is not new in England. However, these teachers acknowledged that it was still only partially developed.

*We can still find ways to involve climate change in more lessons. I think teachers are trained to be quite flexible so they will be able to involve different topics in their teaching. I think there should be a bigger push for teachers to do that and there is a need for schools to ask teachers to do so.*

*(Ivy – Health and Social Care teacher)*

*[...] It could be a climate change week where we address the issue of climate change for the whole week across every different lesson.*

*(Fed – History teacher)*

This suggestion resembles the theme weeks often found in secondary schools, in which each week, the school will discuss one specific topic.

***Extra activities inside schools***

Extra activities were another suggestion for teaching climate change - that came from the interviewees. The way it was suggested that these activities could be run varied:

*Local community, school's hub or community hub can hold a talk where climate change activists come and talk about climate change. We could do an annual program. So right now, we have one person at school that coordinates the climate change agenda. That's good but it's kind of a secondary job. Their main job is teaching. We have never discussed about it or talked about it with the whole staff. That's something that could be done on a much bigger scale.*

*(Fed – History teacher)*

*I think assembly would be a good time to raise these concerns so every year group hears. You also have personal tutor groups, when teachers can work closely with students; those would be the best time to demonstrate that. And I think carrying out activities in school, like planting herbs, planting food and vegetables, I think that would be good as well because I think that demonstrates students can be proactive about it and students can take part in change instead of just listening.*

*(Sophia - Psychology and Sociology teacher)*

### ***Belief in the importance of the school***

Teacher beliefs in climate change education are important because it will affect what and how they teach. All the teachers interviewed agreed that school plays an important role in raising climate change awareness among students and all thought that their colleagues would largely feel the same way.

*It is important because climate change is real and students spend most of their time at schools, but I think we're getting there.*

*(Sophia - Psychology and Sociology teacher)*

*I think it's quite important because we have different students from different social and economic backgrounds - so some of them might come from well – educated homes. Their home is very aware of the situation - but we also have students from areas that might have no good chance of accessing information, so this is where we step in.*

*(Ivy – Health and Social Care teacher)*

However, when asked what they think about the quality of climate change education at their school, they provided some interesting evaluations of it.

*Yes, I think climate change is something that is addressed and we are aware of, but I don't think it's pushed much. We're doing a little bit but certainly we can do a lot more. Hmm... sometimes I feel like we're trying to teach students about environmental issues in general, not only climate change.*

*(Fed – History teacher)*

This belief that her school is taking action towards environmental problem in general rather than climate change specifically was repeated throughout the interviews.

*I think they make conscious efforts in terms of protecting the environment in general rather than climate change specifically. We have different bins around, and students are responsible for emptying those bins. They are responsible for putting the right items in the right bins. We don't have any plastic cups in schools, every student needs*

*to have their own water bottle that they can reuse. So they can't go and get plastic cups somewhere else. So it is mandatory that students have their own cup. In terms of the canteen, we are also promoting that members of the staff bring their own food container, they can go to the canteen to get the food and wash it out. We're trying to get rid of things like plastic forks, plastic knives and the non-reusable container. I think there is an understanding and they are pushing toward it but I think there is a lot more needs to be done.*

*(Sophia - Psychology and Sociology teacher)*

It can be seen that this teacher's school certainly has a vision of protecting the environment. However, this teacher was also fully aware that the focus of her school's actions is more generalized than specifically raising climate change awareness. Similarly, this teacher also thinks climate change does not have much attention within his school but the reason he gives is intriguing.

*[...] Some schools have a higher emphasis on it. For example, schools with a large number of international students will embrace this matter more, however, I taught in a local secondary school which was involved in how it impacted at a local level. It doesn't mean that we don't mention about it, we do, but we prioritize things that relate closely with us. So, it all depends on the context of the school you work in.*

*(Daniel – Business and Economics teacher)*

From this it seems that the teaching and learning of climate change education are driven by the context of the school and more problematically that climate change is often seen as a

global rather than a local issue. Climate change is happening on a global scale and is an undeniably global problem. However, this is not always a helpful perception for schools which may focus very much on the needs of their local community. As this teacher identifies it is the local impact, of this global phenomena, that can at times have more resonance. If the emphasis on this is missed – commitment from teachers and students can be weakened.

### ***Beliefs about being empowered to teach***

All the teachers agreed that while they acknowledge their school's efforts in supporting teaching about climate change, they still think that their school has room for improvement.

*[...] So they (teachers) don't want to spend time teaching what is not tested. I think that's why it's important to find teachers who have interest in the topic. If you want to inspire students, you need to have passion yourself in order to pass the passion on. If the teacher isn't passionate themselves about climate change, how can they inspire other people. Maybe we need outsiders, an expert to do it because those who are passionate about the topic can really inspire students.*

*(Daniel – Business and Economics teacher)*

The answers, as shown above, revealed two different viewpoints. On one hand, some teachers believe teachers should be inspired and be empowered to teach climate change. On the other hand, other interviewees believed that only teachers interested in climate change should be selected to teach about it.

### ***Support for student involvement***

In recent years, young students have become more involved in climate change activities such as school strikes for climate change. This shows that students are now aware of their voice on social issues. When asked, all interviewees showed their support for students' actions.

*I think it's good for students to understand that they have voice and their voice matters. I think it's important for adults and governments to understand that children do have a voice and that it matters.*

*(Sophia - Psychology and Sociology teacher)*

The main theme in all their answer was students' voice while the interviewees also mentioned the benefits that these activities can bring.

*Brilliant, good for them. Education is something continuous and the strike is just for one day. [...] I think if they can actively participate in it, they can come back to class, talk about it, and share their opinion about it whether it's good or bad. [...]*

*(Fed – History teacher)*

However, all expressed some concerns. For some these concerns were limited to safety:

*It's not only about students taking class off to join protests, it's also about safety. You're meant to know where students are. If they are off site, how do you know they are safe,*

*(Daniel – Business and Economics teacher)*

For others they had further concerns regarding missing time at school. Once again, test and assessment were mentioned as elements that cause teachers to worry.

*Students taking time out of class is a bit concerning, especially in 6<sup>th</sup> form, they have only two years to prepare for the test. Missing time off can be quite detrimental to their grade but I think they are fighting for a better good, better environment and for a better life.*

*(Sophia - Psychology and Sociology teacher)*

## **Discussion**

Based on the evidence collected from the interview, it can be seen that climate change education is considered to be important by these teachers. These teachers were fully aware of the importance of teaching climate change to students. There was no evidence of false-neutrality, rejectionism, or denialism among these teachers. Making these results distinct from previous studies (Colston & Thomas, 2019). This may be to do with context, English language studies have often focused on the USA (Plutzer & Hannah, 2018). or it may be a change through time. Studies into attitudes towards human-made climate change may prove to be highly time specific.

On the other hand, they described obstacles that prevent them from teaching, that are familiar from other studies (Liu & Roehrig, 2019). These include: lack of time, lack of resources – including financial resources, an unsupportive school culture, and the pressure of preparing students for tests. There were though differences between the interviewees - towards their students' involvement in climate change activities. They all wanted to encourage and support

their students to participate in climate change activities - while at the same time, they expressed varying degrees of concern about their safety and studies. The most supportive limited their concerns to safety only, while others were concerned about other impacts too. Details are portrayed in the following diagram:

Teacher's belief and attitude	Reality
<ul style="list-style-type: none"> <li>- Belief in the importance of teaching climate change</li> </ul>	<p style="text-align: center;"><b>Teaching climate change</b></p> <ul style="list-style-type: none"> <li>- Lack of time</li> <li>- Lack of resources</li> <li>- Unsupportive school culture</li> <li>- Test and assessment pressure</li> </ul>
<ul style="list-style-type: none"> <li>- Support</li> <li>- Encourage</li> <li>- Compliment</li> </ul>	<p style="text-align: center;"><b>Student's involvement in climate change activities</b></p> <ul style="list-style-type: none"> <li>- Concerns about safety</li> <li>- Concerns about students' results in tests</li> </ul>
<ul style="list-style-type: none"> <li>- Schools play an important role in climate change education</li> <li>- Schools are aware of delivering the message to students</li> <li>- Schools should encourage and inspire teachers to teach climate change</li> </ul>	<p style="text-align: center;"><b>School roles in climate change education</b></p> <ul style="list-style-type: none"> <li>- Schools still have a lot to do to improve climate change education</li> <li>- Teachers are not yet inspired or encouraged to teach about man-made climate change.</li> </ul>

Figure 2. Climate change education: belief and reality

The obstacles they described such as tests, time, and resources that teachers face they also described as being at a systematic level, which seemed out of their control (as teachers). Given that getting students to pass the test is one of the key tools used to demonstrate a teacher's ability, credibility and effectiveness, it is understandable for them to choose to focus on the test rather than what is not included in examined content.

## **Conclusion**

From this scoping study it seems that climate change education has not yet found its own embedded position yet within English schools. Although teachers are fully aware of the importance of climate change education, they lack time, resources, and in some schools a supportive culture. However, this study also revealed a very high level of understanding and commitment. The false neutral position identified in earlier studies, by which teachers teach aspects of climate denialism, was not found at all. They also all believe that teachers have a vital role to play in climate education. They were largely supportive of student voice over this issue, although they were divided on their specific support for climate strikes. However, this initial study gives room for cautious optimism – within England at least.

This short paper will be used as a discussion document within training in schools that the two authors are affiliated with and as such will become part of an ongoing conversation about teaching climate change in schools. This short scoping study is, by definition, limited in scope. However, it is the beginning of a journey for the authors and is a starting point for further research both quantitative and qualitative into this topic – research in which teachers' voice can be accessed as part of an ongoing cycle of engagement with practitioners.

*[3623 words]*

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## **Appendix A – Interview Schedule**

- What subject do you teach and which age ranges?
- Do you teach climate change awareness in your classes?
- Is climate change taught elsewhere in the school – do you know how and where?

- How important do you think it is for teachers to raise climate change awareness among students?
- Do you feel prepared to teach about climate change?
- Do you feel adequately resourced to teach about climate change?
- In which way do teachers in your school feel empowered to raise climate change awareness among students?
- In which ways could teachers in your school be more empowered to teach about climate change?
- What are the difficulties teachers face, in raising climate change awareness among students?
- What are your views on students taking classes off to participate in climate activism including strikes?
- What views are there, in your school, on students taking classes off to participate in climate activism including strikes?
- Can you give me examples of good practice (yours and others) when teaching about climate change)?