

Learning and Teaching of Climate Change, Sustainability and Disaster Risk Reduction in Teacher Education in England and Japan

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Abstract

This paper reports the study which explored the learning and teaching of the topics of climate change, sustainability and disaster risk reduction in secondary-level teacher education programs in England and Japan. Through interviewing teacher educators, the study particularly probed how teacher education programs used local knowledge and collaboration in discussing the above topics. Geography tends to be the main subject area for these global agendas, but its crammed curriculum is “an ongoing challenge” for teacher education. Some researchers demonstrate that university-based initial teacher education has “ignored” training teachers on how to implement environmental and sustainability education at schools. Besides, the inquiries into how initial teacher education equips geography teachers for the learning and teaching of disaster risk reduction are still scarce. This paper aims to fill this gap by bringing together the fields of geography education, climate change and sustainability education, disaster risk reduction education and initial teacher education.

Keywords: Climate change and sustainability education, collaboration, disaster risk reduction, England, geography curriculum, initial teacher education, Japan, local knowledge.

Introduction

In the field of teacher education, there is a consensus that contents of education for sustainable development should be integrated into its curriculum (Goller & Rieckmann, 2022; Martinsone et al., 2023; Pegalajar-Palomino et al., 2021; Salite et al., 2020). One of the recent trends is that many teacher education programs emphasize the understanding of climate change mitigation and adaptation and disaster risk reduction (DRR) in pursuing sustainable future (Brennan, 2019; Mochizuki & Bryan, 2015; Murayama & Yagi, 2016). At the same time, research has shown that many teachers are not necessarily familiar with working in an interdisciplinary manner (Fernández et al., 2023; Koskela & Kärkkäinen, 2021; Rasis et al., 2023). This paper reports the study which explored such challenges of the learning and teaching of the topics of climate change, sustainability and DRR in secondary-level teacher education programs in England and Japan. The study specifically focused on how the programs used local knowledge and collaboration in discussing the above-mentioned global agendas.

Geography tends to be the main subject area that engages with these agendas, besides a wide variety of topics. The geography curriculum being crammed has been “an ongoing challenge” for secondary schools (Sharpe & Kelman, 2011) and also for initial teacher education (ITE). In England, for example, university-based ITE has “ignored” training teachers on how to implement environmental and sustainability education at schools (Walshe & Tait, 2019). Similarly, even though the contents of DRR have increased in the geography curriculum in both Japan and England (Ida, 2016; Sharpe & Kelman, 2011), inquiries into how ITE equips geography teachers for those global agendas are still scarce. This paper aims to fill this gap by bringing together the fields of geography education, climate change and sustainability education (CCSE), DRR education and ITE. CCSE is a fast-growing field of study particularly in the UK following the government’s introduction of the sustainability and climate change strategy (DfE, 2022). DRR refers to “systematic efforts” to reduce disaster risks throughout mitigation, preparedness, response and recovery phases (UNESCO, 2023). Even though the focus of the study was on preparedness education, the paper uses “DRR education” following the definition that “disaster education”, “disaster risk education”, and “disaster prevention education” are “different expressions that essentially mean DRR education” (Shaw et al., 2011, p. 7).

Geography encompasses a wide variety of topics (Heidari et al., 2023; Puttick & Cullinane, 2022). Consequently, its status and scope in educational curricula are diverse across the world (Brooks et al., 2017). Between Japan and England, how the subject is structured in the secondary-level national curriculum varies. In Japan, Social Studies in the junior high school curriculum (13–15 years old) hosts three fields: geography, history and civics. This study mainly looked at the field of geography. In England, Geography is an independent subject that is compulsory up to Key Stage 3 (11–14 years old). How ITE is undertaken in the two countries also differs. It is an optional course attached to most of the undergraduate degrees in Japan, while ITE in England is largely offered at the postgraduate level with various options one being a Postgraduate Certificate in Education (PGCE).

This paper involves a comparative perspective but recognizes that the two sets of programs chosen cannot be juxtaposed given the teacher education systems differ between Japan and England. One clear difference is the Japanese programs are part of undergraduate degrees, while English PGCEs are postgraduate degrees. The paper encapsulates the principles behind the different approaches, rather than conducting a parallel comparison of the two countries’ programs.

The paper first positions the study within the major discourses identified in the existing literature and describes the subject “geography” in the two national curricula. The paper then explains the methodology of the study and presents key findings. The paper highlights that in Japan there is more inclusion of DRR contents, which is associated with the country being more disaster-prone than England. The paper also suggests that the field of geography is part of an umbrella subject of Social Studies in Japan, while it is an independent subject in England, which also plays a part in varied focus in the curricula.

Literature Review

The Use of Local Knowledge and Collaboration in Teacher Education

Education is emphasized in international agreements, including the Sustainable Development Goals and the Sendai Framework for DRR 2015–2030, as an enabler for climate and DRR action in pursuing sustainable futures. Otto et al. (2020), for example, list “strengthening climate education and engagement” as one of the “social tipping interventions” for increasing climate change mitigation and adaptation. Recent research also confirms that “starting early” is an effective pathway for resilient communities (Luetz & Sultana, 2019; Rofiah et al., 2021). Fostering “change agents” (Andersen, 2018) with high environmental awareness is significant in times of climate emergency. Their disaster learning often leads to positive changes in communities.

Schools are therefore seeking how to equip pupils and prospective teachers with the fast-growing demands for climate and DRR action (Brennan, 2019; Stevenson et al., 2017). However, there is some evidence that new teachers in particular are struggling to cope with such a demand and require more support for professional development on how to handle these topics (Winter et al., 2022). Research on how school curricula deal with CCSE and DRR education and how teachers are trained to teach them is still limited.

One area of focus could be local knowledge given there is growing research that demonstrates the significance of integrating local knowledge in climate and DRR action (Klonner et al., 2021; Pierro et al., 2022). This is an urgent call given much local knowledge is lost to younger generations. Local knowledge can be defined as “the unique knowledge developed over an extended period of time and held by a given society in a specific location” (Naess, 2013, p. 100). In other words, local knowledge is “context specific and varies within and across regions” (Hill et al., 2020, p. 11). Naess (2013, p. 100) elaborates that the role of local knowledge is to cope with and adapt to “changeable and changing environments, whether climatic or otherwise, and at household as well as community levels. There are thus a number of obvious linkages between adaptation and local knowledge”. Schools tend to hold the knowledge of their natural and social contexts locally. What they can achieve on their own may be limited, and hence, they opt to collaborate with local communities and organizations in transferring such local knowledge to students. School-community collaboration, in particular, has been promoted by both CCSE and DRR experts (Oktari et al., 2015; Trott, 2019). Community-based approaches to CCSE and DRR can be effective particularly in extra-curricular activities (Kitagawa, 2021; Kitagawa & Samaddar, 2022; Sharpe & Kelman, 2011). In the next section, how locality and collaboration manifest in the geography national curriculum of Japan and England is described.

Geography Curriculum

Both Japan and England have a standardized curriculum for geography. The present National Curriculum was implemented in 2017 in Japan (it is called the Courses of Study) and in 2014 in England. This section summarizes the aims, tasks and content guidance of each curriculum. The Japanese original texts were translated by the author of the paper. The texts only relevant to this paper were extracted from the 240-page Courses of Study. Some of the English texts were also summarized.

In the Courses of Study for Social Studies in Japan (MEXT, 2017), the following is the overall aim:

To develop basic qualities and abilities as Citizens necessary for the formation of a peaceful and democratic nation and society and to live proactively in the globalizing international community with a wide viewpoint using social perspectives and ways of thinking and through problem pursuing and solving activities. (MEXT, 2017, p. 29)

Under this aim, three specific tasks are set out for the field of geography:

1. To understand regional phenomena and characteristics regarding our country's land and other parts of the world; to acquire the skills to effectively investigate geographic information from surveys and various materials (MEXT, 2017, p. 31);
2. To consider the meaning, significance, characteristics and interrelationships of geographical phenomena from multifaceted and multidimensional perspectives by focusing on their location, distribution, interdependence between humans and the natural environment, spatial interdependence and regions; to make just choices and judgments toward solving geographical problems and to explain thoughts and judgments and base them to hold discussion (MEXT, 2017, p. 32);
3. To cultivate an attitude of proactively trying to pursue and solve issues to realize a better society regarding various phenomena in Japan and other parts of the world; to deepen the affection towards our country's land through multifaceted and multidimensional consideration and in-depth understanding and the awareness of the importance of respecting the diverse lifestyles and cultures of different parts of the world (MEXT, 2017, p. 36).

For the contents, the field of geography in Japan comprises (MEXT, 2017, pp. 31-82):

1. Regional composition of the world and Japan:
 - 1) Regional composition;
2. Various regions in the world:
 - 1) People's livelihoods and the environment of different parts of the world;
 - 2) Various regions in the world;
3. Various regions in Japan:
 - 1) Methods of regional surveys: ...the sites should be around the school, and the topics should be chosen taking the local situations of DRR, demographics, industries and transport into consideration....
 - 2) Regional characteristics and regional divisions in Japan: ...to understand the characteristics of the natural environment of Japan based on the characteristics of its landform and climate, it being an island surrounded by the sea, its disaster prevention measures against natural hazards....
 - 3) Various communities in Japan: ...to consider, for example, what disaster prevention measures are required responding to communities' disaster risks....
 - 4) Shaping a future community: ...to consider, design and express a shape of a future community from multifaceted and multidimensional perspectives paying attention to local links, changing communities and sustainability of geographical issues....

The national curriculum for geography in England stipulates its overall aim and tasks as follows (DfE, 2023):

A high-quality geography education should inspire in pupils a curiosity and fascination about the world and its people that will remain with them for the rest of their lives. Teaching should equip pupils with knowledge about diverse places, people, resources and natural and human environments, together with a deep understanding of the Earth's key physical and human processes. As pupils progress, their growing knowledge about the world should help them to deepen their understanding of the interaction between physical and human processes, and of the formation and use of landscapes and environments. Geographical knowledge, understanding and skills provide the framework and approaches that explain how the Earth's features at different scales are shaped, interconnected and change over time.

1. To develop contextual knowledge of the location of globally significant places – both terrestrial and marine – including their defining physical and human characteristics and how these provide a geographical context for understanding the actions of processes;
2. To understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time;
3. To be competent in the geographical skills needed to:
 - 1) collect, analyze and communicate with a range of data gathered through experiences of fieldwork that deepen their understanding of geographical processes;
 - 2) interpret a range of sources of geographical information, including maps, diagrams, globes, aerial photographs and Geographical Information Systems;
 - 3) communicate geographical information in a variety of ways, including through maps, numerical and quantitative skills and writing at length.

The contents for Key State 3 are listed as follows.

1. Locational knowledge of the world's countries, focusing on their environmental regions, key physical and human characteristics, countries and major cities;
2. Place knowledge of a region in Africa and a region in Asia;
3. Human and physical geography:
 - 1) The key processes in:
 - a. physical geography relating to: e.g., weather and climate, including the change in climate from the Ice Age to the present;
 - b. human geography relating to: e.g., population and urbanization; international development;
 - 2) Human and physical processes' interactions and human activity's reliance on natural systems;
4. Geographical skills and fieldwork: globes, maps and atlases; Ordnance Survey maps; Geographical Information Systems; undertaking fieldwork using multiple sources.

Two initial observations can be made from the above list of the two national curricula. One is that Japan has more references to natural hazards and disaster prevention, while in England, disaster and disaster risks are not explicitly mentioned. The other is that fostering attitudes towards building a local community is part of geography education in Japan while acquiring geographical skills appears to be emphasized in the English curriculum. These points will be further discussed in the paper.

Methodology

This exploratory study inquired about the use of local knowledge and collaboration in the learning and teaching of climate change, sustainability and disaster preparedness. The study focused on the subject of geography in which CCSE and DRR education are usually taught in both Japan and England. The two research questions are as follows:

- 1) *How are the learning and teaching of local knowledge in the topics of climate change, sustainability and disaster preparedness dealt with in ITE?*
- 2) *How are collaboration with communities or organizations used in the topics of climate change, sustainability and disaster preparedness in ITE?*

This study is of an interpretivist nature, which employed a case study approach. The study considered four cases in total: two ITE programs of Social Studies at two national universities in Japan, and two university-based Geography PGCEs in England. The cities in which these programs are offered have experienced the impacts of climate change. The expectation was they hold some context-specific climate and DRR knowledge and also developed collaborative relationships for climate and DRR action.

The empirical data were collected through semi-structured interviews with four teacher educators of the above programs. The author of the study approached them either directly or through my contacts after confirming that they were experienced teacher educators in the geography subject and that they hold an in-depth understanding of geography as a discipline shown in their profiles and publications. A flexible approach was taken to obtain an overview of the current situation in geography teacher education, and speaking with those teacher educators enabled the author of the paper to do so. Initially, lesson observations were planned in their programs, but the time frame did not work out except one in Japan. It was, however, complemented by a range of materials, including the scheme of work and worksheets provided by the teacher educators.

Each interview comprised eight broad questions, including “How much content is on climate change and climate change-induced disasters in the program?”; “To what extent and how is local knowledge referenced in the program?”; “To what extent and how is collaboration utilized in the program?” and “To what extent are the learning and teaching of preparedness (prevention and reduction) for climate change-induced disasters included in the curriculum?”.

The interviews in Japan were conducted in person, and those in England were via Zoom following the interviewees’ preferences. With their permission, the one-hour interviews were recorded and summarized. The collected data were manually analyzed guided by the research questions, and the key themes were identified for discussion. For anonymity purposes, the Japanese interviewees are referred to as J1 and J2, and the English interviewees as E1 and E2 in the following sections.

Results

Findings From the ITE Programs in Japan

1) Use of local knowledge

In both programs in Japan, local knowledge constitutes an important part of the curriculum. This is not a surprise since “a local study [*chiiki gakushu*]” is included in the Courses of Study of the field of geography.

As part of physical geography sessions, J1 takes her TTs’ group to local towns to conduct field surveys of the seashore and rivers, and engineering DRR measures such as levees and river re-routing. In the classroom, she looks at some case studies of climate-related disasters in the region, for example, fluvial and pluvial floods and landslides. After discussing the mechanisms and causes of such natural hazards,

I show videos and give TTs activities and let them consider what they would do in this classroom, in their bedroom if a disaster hits. (J1 interview)

Her concern extends to the areas of TTs’ placements.

I also advise them to learn about the hazards and disaster risks in the communities where they are placed. (J1 interview)

J2 also emphasized the connection between local knowledge and DRR by referring to the story of the wells constructed as part of the reclamation project in the 1950s in the region.

Such piece of knowledge should be taught in geography and shared so that wider populations can benefit from the wells (in times of water shortage caused by natural hazards). (J2 interview)

He went on to argue that

you can respond better in time of a disaster if you have local knowledge. How to change TTs’ mindset – that is the challenge. It doesn’t have to be called “preparedness education”. (J2 interview)

J2 further offered his critical view on “a local study”.

*“A local study” has two aspects: learning in the local community and learning about the local community. The focus has shifted to the latter, which is hard when teachers are outsiders. We shouldn’t return to the pre-war “hometown study [*kyodo gakushu*]”. No point in remembering the names of local temples and shrines. It should be about the natural environments of the community with DRR perspectives (J2 interview).*

His approach to local knowledge derives from his philosophy of geography: “There is a divide between the land and humans; the two need to be connected (J2 interview).” This certainly applies to the discussion of climate change.

TTs need to understand climate change involves a wide range of topics from food security to sea-level rises.... Planting trees doesn’t solve the problem (J2 interview).

2) Use of collaboration

J1 expressed collaboration in various forms of mutual help taught in the sessions on human geography. She shows the video of survivors’ stories to demonstrate that

cooperating with neighbors determined their survival when their community was hit by a disaster.

I then paused the question to TTs, “have you ever taken part in an evacuation drill in your community?” (J1 interview)

Such an approach is to instill in TTs the meaning of preparedness. She also refers to her own experience in explaining the importance of neighborhood support.

I live in a low ground with a high flood risk, and my designated evacuation shelter is 15 minutes away. But recently, my neighbor informed me that a nearby temple is available as a temporary shelter. (J1 interview)

TTs must have understood that having a shelter in the vicinity would be a lifesaver for J1. She then added, “I encourage TTs to support the evacuation of others” (J1 interview).

J1 clearly shows her efforts in conveying the significance of collaboration and support to TTs. This was also summarized as follows in her statement.

Geographers tend to talk about disasters, and disaster risk is shared in geography. The social meaning of geography is to raise awareness of disaster risk (J1 interview).

J2 also organizes a range of collaborative activities for his TTs. With local junior high school students, his TTs undertook local field surveys and created a board game, which included a range of local DRR knowledge. This activity is a demonstration of how local knowledge can be connected to DRR, as he emphasized above. The collaboration further involved a local community center. To disseminate its benefits, TTs and junior high school students presented the board game at the community center, to which parents and residents were invited.

Our (geographers’) role is to connect the local landscape and risks, and people will know what they will have to do. (J2 interview)

He again returned to his point about connection.

3) Inclusion of preparedness education

Both J1 and J2 demonstrated that they integrated DRR perspectives in discussing local knowledge and collaboration. Conversely, the themes of DRR are included as much as possible in the field of geography.

Nevertheless, J2 identified issues.

The Courses of Study recognizes DRR education, but the issue is textbooks are often written by experts who don’t necessarily understand DRR. DRR education is not a discipline.... Geographers can read hazard maps, but they are only a tool for risk perceptions. (J2 interview)

Besides, “there is a lack of time in the geography curriculum, which makes DRR education periphery” (J2 interview). This links to the ongoing debate in Japan on whether to make DRR education an independent subject, and J2 seems to be for it.

Findings From the ITE Programs in England

1) Use of local knowledge

E1 illustrated his reference to discussing local knowledge with the fieldwork trip to the Lake District. Comprising 5% of the course, the four-day trip provides an authentic opportunity for TTs to examine actual sites of increasing flood risks, prevention and reduction measures such as re-wilding and hard-engineering solutions.

That's the most obvious (example) in the Lake District...talking to farmers and other people who understand the local area (E1 interview).

E1, however, emphasized that local knowledge could be taught and learned in a classroom as well, applying “culturally responsive pedagogy” – being “culturally responsive to who your class is”.

We have a session which includes talking about climate change and how to use examples that children will relate to. So if you've got, for example, a lot of black British children in the classroom, perhaps who have families in the West Indies, we use examples from the...region in (thinking about) positive sustainable futures and climate change actions... Or, allowing students to choose which examples they use if they're looking at, say, renewable energy (E1 interview).

TTs are also “encouraged to” learn and teach about the local knowledge around the schools they are placed.

A lot depends on who is mentoring them in the school. If their geography department uses a local example, then they're likely to use that local. (If not,) not so a lot (because they are) steered by their support in school because they spent two-thirds of their time in school (E1 interview).

Many of his partner schools are good at geography development in using local knowledge in fieldwork or local studies. “But not maybe as much as they could be, so sometimes they'll use an example because it's in the textbook” (E1 interview).

E2 also iterated a similar point saying she could only suggest TTs to include local knowledge because individual schools decide about the learning and teaching of locality.

Particularly KS3 has a lot more flexibility, and schools might have a lesson on “Flooding in the Local Area”. It would be the choice of the geography department of the school as to whether they teach about flooding in the local area if it were a problem in the local area. (E2 interview)

2) Use of collaboration

E1 explained his program works with local organizations in London.

For some years we've done fieldwork at King's Cross, the redevelopment, and we've involved the visitor center manager to talk to our students (TTs) about the redevelopment. (E1 interview)

Other collaborators include Kew Gardens. TTs visit there and learn how they are involved in CCSE.

Partner schools also bring in local community groups to school. For example,

in the sustainable transport partnership in London, where an electric scooter company was coming into school, and she (geography teacher) was working with them to look at the way you could have an electric scooter higher transport scheme working with the local borough authority. (E1 interview)

In E2's case, she would talk about collaboration in her sessions with TTs, but "what they teach specifically I couldn't say. Each school is different" (E2 interview). One of the examples of collaboration might occur at partner schools in organizing and undertaking fieldwork for their pupils. Schools are supposed to provide pupils with fieldwork at least once per year, and TTs gain a fieldwork experience through accompanying the school's trip. The PGCE program itself does not offer field trips, although it covers fieldwork techniques and fieldwork ideas during the final fortnight when they return to the faculty.

3) Inclusion of preparedness education

According to E1, "for most teachers or educators in England, it's not immediately what we think of – the teaching of prevention, reduction and preparedness".

Having said that....it does come in because when we're teaching about climate change and sustainability, we bring in, you know, features and ideas of discussing and debating this and thinking about mitigation and responsibility, and so forth. So, in a way, prevention and reduction is all part of teaching about climate change...but not very explicitly. (E1 interview)

He went on to explain geography tends to teach "causes, effects or consequences and solutions. So prevention and reduction would sort of fall within that consequences" but with limited themes such as "energy efficiency at homes and schools or re-wilding biodiversity" (E1 interview), not flood evacuation, drilling or early warning. This is because

the prime purpose (of the program) is to understand and be a geographer and think yes, geographically.... Preparedness at the moment is sort of secondary to the knowledge, developing knowledge and understanding of geography (E1 interview).

He added that the learning and teaching of preparedness is "likely more in the future" (E1 interview). E2 seems to have a similar perspective saying that "we want to foster leaders of geography so they should be (aware of preparedness education)" (E2 interview).

In E2's program, she "touches upon" preparedness for climate change as part of the sessions "Exploring Natural Hazards", "Landform and Processes" and "Climate and Meteorology".

But the real "meat" comes when TTs teach at school teaching the students. TTs have to teach what the schools teach (E2 interview).

She also discusses the “three Ps – prevention, protection, preparedness” in a general sense. Specifically on preparedness, she uses Japan as a case study. These are as much as she could cover as “the volume of hours hasn’t increased. I cannot increase it because of other subjects” (E2 interview). E2 however has a plan to make a change next year.

The tendency is to talk all the doom and gloom aspects about it (climate change)... but we also need to teach trainees to convey to students there is hope, and we should work towards mitigating against it. It’s not all the end of the world’s type of thing. That would feed anxiety even more.... I will discuss with TTs more, just to be aware of eco-anxiety. (E2 interview)

She also aims to include more content on climate change in other sessions, e.g., sustainability, which does not necessarily refer to climate change at the moment.

Even though we teach in units – coasts, populations, rivers – we need to be teaching in a way students see connections between all of those things. So something like climate change is a real example of something that would run underneath all those things. (E2 interview)

Although there is not much space for preparedness education in the current programs in England, both E1 and E2 acknowledged it should be covered in geography.

Discussion

The most evident point of the above analyses was already identified earlier in the description of the two national curricula: the geography curriculum includes preparedness education in Japan, but it is not clearly visible in the English case. As E1 indicated, geographers in England did not immediately think of prevention, reduction and preparedness for disasters. The term “DRR (*bosai*)” is used in many parts of the Courses of Study of the field of geography, whereas the National Curriculum of Geography does not refer to “disaster”, “risk” or “reduction”. The obvious explanation for this difference is that Japan is a much more disaster-prone country due to the high frequency of both climate change-induced and geological hazards. There could be another explanation – the field of geography being part of Social Studies in Japan. As J1 put it, “the betterment of society” being an overarching aim of Social Studies, the field of geography has its stake in fostering civic responsibility that includes having DRR knowledge and awareness. In some high-risk areas in Japan, *bosai* is considered a “manner” of living in the community (Kitagawa, 2019, 2019a).

This difference leads to the second point that local knowledge and collaboration are considered significant themes in geography in Japan, particularly for DRR purposes. Both J1 and J2 described how they introduce local knowledge to TTs to use that knowledge in the time of a disaster. Being aware of the surrounding environment makes you prepared. Collaboration with neighbors and other members of your community strengthens your environment and, hence, preparedness. Many DRR studies have demonstrated that social capital plays an important role in the response and recovery phases of disasters (Carmen et al., 2022; Habibov & Afandi, 2017; LaLone, 2012). Again from the Social Studies perspective, geography teacher educators intend to make TTs aware of the values of social capital. On the other hand, in England, local knowledge is mainly dealt with at placement schools. It all depends on the individual school – if it is

located in a high-flood-risk area, it might be teaching early warning and evacuation. What schools teach is not always shared with PGCE tutors. Opportunities for collaboration seemed to be varied among the English programs as well. External organizations and individuals offer support in TTs' fieldwork in E1's program, while fieldwork and collaboration are the matters of placement schools in E2's program.

What is prominent in the cases in England is more explicit references to CC and sustainability in the PGCE sessions, and this is the third point. Both E1 and E2 recognized an increased urgency to scale up the teaching of CC and sustainability in the programs, even though the topics had always been "there". The scheme of work may not be dominated by these topics, but they are regarded as the themes that should run underneath all sessions, as E2 mentioned. Such "urgency" can be explained by the fact that CCSE is being established in England as a field of study supported by the UK government's sustainability and climate change strategy (DfE, 2022). As both teacher educators anticipated, the contents on "positive sustainable futures and climate change actions" are likely to grow in Geography PGCE.

One concept that was addressed by both Japanese and English teacher educators is "connection", which was used in describing the role of geography. For J1, even though she did not use the word, she hinted at the connection between society and the environment by indicating "the social meaning of geography". J2 argued that geographers have a role "to connect the land and humans". E1 explained that geographers "look at a problem or an issue...and then make connections through ideas like place and scale". For E2, it is "a big thing" to make connections between different geographical topics across different sessions. Despite various expressions, all four educators' intention seemed to be to convey to their TTs that the principle of "geographical thinking" is to develop "a holistic understanding of geographical processes" concerning the human-environment relation (Heidari et al., 2023). Although to a different degree between Japanese and English programs, topics such as climate change, sustainability and disaster preparedness function as "a connector" that underpins the holistic understanding. As E2 put it, those topics should "permeate other areas of geography".

Conclusion

This study has found many references to local knowledge and collaboration concerning disaster preparedness in the ITE programs in Japan, but this is not necessarily the case in the English programs. Apart from the apparent explanation that Japan has more disaster risks, this paper has identified that the structure of the curriculum has a large part to play. In Japan, Social Studies comprises the fields of geography, history and civics. This structure compels each field to pursue the overall aims of Social Studies. Consequently, the field of geography has strong "social" concerns ranging from learning about your local community, being prepared for probable natural hazards in your community and contributing to bettering society. Cultivating such attitudes is emphasized through the learning of geography.

On the other hand, geography is an independent subject in England. Great attention is paid to connecting the concepts within geography to develop geographical thinking and skills. Climate change, sustainability and, possibly, disaster preparedness in the near future are identified as underlying themes that connect a diverse range of geographical concepts. Geographical inquiries using frameworks and templates and

undertaking field surveys using various tools are considered skills that geography entails.

Nevertheless, this should be a tentative conclusion given much of the activities of ITE happen at placement schools. In this light, in further research into the use of local knowledge and collaboration, visiting schools to interview teachers from geography departments and observe activities will be the methods of the next data collection.

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