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THE CONTROVERSY OF CLIMATE CHANGE EDUCATION IN THE SINGAPOREAN SCHOOL CURRICULUM: THE PURPOSE OF CLIMATE CHANGE EDUCATION AND POSSIBLE STRUGGLES ON THE WAY OF IMPLEMENTING IT INTO THE CURRICULUM

Аннотация: В данной статье рассматривается проблема внедрения обучения климату и климатическим изменениям в рамках школьного курса предмета «География» в Сингапуре. Проанализированы некоторые этапы работы над введением данной темы в рамки школьной программы обучения. В статье подчеркивается и обсуждается мнение учителей по поводу такой сложной и спорной темы как важность изучения климата и климатических изменений в рамках школьной программы.

Ключевые слова: климат, климатические изменения, образовательная система.

Abstract: this article examines the problems of implementing climate change education into the Singaporean school curriculum as an element of geography course. The stages of work on implementing this element into the curriculum have been analyzed. Various teachers' opinions and beliefs about this controversial and debatable issue are highlighted in this article.

Key words: climate, climate changes, educational system.

In 2010 UNESCO declared that climate change education (CCE) is a fundamental strategy to react to climate change [29, c. 2]. Recently, in the Global

Education Monitoring review, the United Nations with the support of UNESCO restated the significant role of education in building climate change consciousness, knowledge, awareness and decreasing of vulnerability to climate-connected emergencies or disasters. Standing for a comprehensive involvement of the education field into the issue, it highlighted the urgency for a serious action of building climate education for teachers, students, and societies [29, c. 3].

Named as the “defining challenge of our time” [29, c. 2] there is a common agreement on the importance of climate change education. Education is regarded as 'supporter' to societies and every person individually in making the right decisions in diminishing the climate change problem and improves adaptive capabilities in responding to its approaching effects. Regardless of hesitation and struggle in some cases, many nations have already included Climate Change Education in their climate change agenda, with the school educational program giving a prepared structure for knowledge distribution and skills improvement [29, c. 3].

In the case of Singapore where the government has a well-determined climate change approach in general, it does not have a certain explanation about how CCE can be implemented in formal education. Normally, climate change is an issue discussed in schools, usually at geography classes as a subject for environmental education, but, it is hardly explained as being implemented in the school curriculum in the government policy documents [1, c. 12]. It appears to be unusual that in a city that is famous for its extremely systematised processes, CCE is practiced in the absence of adjustment to directives from high-level state educational organisations.

Climate change education in different national and governmental contexts presents a considerable challenge to both teachers and teacher educators mainly because of its politicised and disputable nature. Hess [18, c. 37] describes controversial social issues as “questions of public policy that spark significant disagreement”. Hess [18, c. 36] states that controversial social or public issues are real, current, and lead to questions with numerous legal answers. Also, Morgan [22, c. 17] highlights that geographical problems are usually “wicked troubles” that make them difficult to determine and there is no exact answer for any of them. Dealing

with this kind of controversy in the classroom is difficult, that is why it demands teachers and teacher educators to make significant judgments and to analyse how all these judgments are formed by their beliefs concerning the idea of geographical education.

There are a lot of different environmental issues and among them, climate change, particularly, is mainly influenced by the predominant political, economic, and social contexts and situations. "Perhaps more than any other environmental topic," Lidstone and Stoltman [21, c. 5] highlight, "climate change is deeply intertwined with political and cultural values." That is why it is essential for studies to investigate how teachers and teacher educators build their beliefs and expand their perspectives towards climate change education in different countries and within different nations. It happens because teachers and professors "serve as the gatekeepers for the specific content that students are expected to know" being placed "at the convergence of public policies and scientific research, occupying that important transition zone" [21, c. 90].

There are several contexts such as social, historical, cultural, and political ones that influence teachers' perception of a controversy. Social studies education, with its bigger significance on possibly controversial issues, is especially vulnerable to restrictions as it is usually subjected to political and social tensions [3, c. 4]. Therefore, teachers and teacher educators might choose to avoid controversy by means of self-censoring regarding what they teach. All these challenges on the way to the academic flexibility and independence of teachers and teacher educators to teach and of learners to study matter because this academic flexibility is important for democratic social rebuilding and for establishing more reasonable relations among citizens.

Moreover, it is essential to look at the impact of teachers' individual views on controversial issues and also their knowledge of greater societal disadvantages in relation to the teaching of controversial issues. A number of different investigations showed that race, religion, sexual orientation, and other matters associated with diversity, for example, used to be viewed as especially controversial in racially and

religiously diversified countries [9, c. 5]. For example, there were some studies organised in countries that have had a long-time conflict history, such as Northern Ireland or Cyprus, also highlight the seriousness of paying attention to the emotional difficulties experienced by teachers and teacher educators as they work with controversial issues. All these studies indicate that history instruction in different countries and nations can be emotionally filled and charged with pressure, partly because this is involved with memory, social identity, and historical chronology [9, c.6].

This article will focus on a topic that with time has become progressively controversial in numerous contexts — climate change education. Along with my investigation, I have noticed that only a few studies have explored how teachers' attitudes to potentially controversial issues connected to climate change education are affected by the socio-political environment. The Singaporean case seemed to be unusual to me because the state itself has specifically supported the science of climate change and has determinedly instituted policy methods in order to pay attention to some of these matters. Moreover, Singapore's extremely centralised education system has a critical and important influence on how teachers and teacher educators deal with controversial issues in the classroom.

This article will explore the issues associated with transforming practice through deepening education and sustainability in a particular context. This article will be about my internship experience in one of the Singaporean schools and specifically, I will be investigating the question of the controversy of climate change education and struggles that a teacher can face on the way of implementing climate change education into the curriculum. I will examine academic research literature to support my analysis in order to give it academic integrity.

In the next section, I will provide a brief explanation of how teachers' knowledge and beliefs about their subjects matters, then it will be followed by an overview of the relevant literature about the teaching of controversial issues and climate change education. Finally, I will conclude with a discussion of its implications for climate change education.

Background for context

In 2017, I was employed as a primary school teacher at one of the Singaporean schools. It was an absolutely outstanding experience for me being a kindergarten teacher to teach abroad, even though it was for a short period of time. I taught a variety of subjects, including geography and ecology for children. What surprised me most is that their school curriculum concerning geography contained a lot of information about climate change, global warming, human influence on nature, the importance of recycling, etc. Compare to Russia, where I am originally from, it seemed to be very unusual to me because these kinds of issues are not discussed well enough in Russia on the level of primary school. After my internship, I was curious to find out about how Singapore managed to successfully implement such controversial topics as climate change into the school curriculum and what are the possible struggles that their teachers could face while teaching these controversial topics. This has determined my choice of the topic for this article.

Scientists argue that teachers' knowledge and assumptions about their subjects at school are the main direct influences on what they teach and the most important how they teach. For example, a report of some pre-service geography educators conducted by Catling [4, c. 10] showed that participants found it difficult to handle the complexities of the subject importance in sustainable improvement issues. As was noted by Fives and Buehl [14, c. 5] teachers' knowledge is essential because schools are seen as one of the most important sources of information about matters like climate change. Besides teachers' knowledge, teachers' beliefs play an important role as well as informing teachers' critical thinking and the most important decision-making process. Some of the authors stated that factors that have an impact on the formation of beliefs about controversial issues like climate change involve psychological processes and operations such as confirmation bias and cognitive dissonance, religious and spiritual ideas and feelings about nature, opinion about policy and administration in society, and awareness of scientific ideas as well as trust in scientific processes. Essentially, these kinds of beliefs may be flexible and not open to persuasion. Also, they may contain emotive elements that are quite stable and

will not change in spite of new information [14, c. 5].

The ways in which teachers would arrange a curriculum are affected by teachers' value towards the subjects they teach. It happens because values are basic convictions that can shape behavior and can be used as reference points to assess some specific issues or topics. It can be especially relevant for controversial issues like environmental education with its own value-charged character expressed in disputed meanings and diversify goals. For example, researchers like Fien [13, c. 3] and Morgan [22, c. 4] highlight that the aim of environmental education is to expand environmental values in students when other people believe that the aim of environmental education should be to progress independent and critical thinking. Not only researchers but also teachers themselves have different beliefs about the aims of environmental education. For example, some international reports proved that teachers can feel responsible for the advancement of beneficial environmental approaches and behaviors. In contrast, Cotton's [10, c. 8] report on three teachers in England showed that teachers do not always feel satisfying with absolutely promoting the environment and they would rather prefer to take a neutral position.

Teachers' beliefs about their students

There are a lot of different governmental educational systems where students are arranged into different groups according to their abilities. The curricular variety and academic diversity can be formulated differently, including the development of special instructional programs with absolutely different curricula and educational results [11, c. 5]. Some studies indicate that teachers' attitudes to students' capabilities and their race or backgrounds can result in different forms of prejudice or inequalities in relation to how and what different groups of students are taught.

For instance, Page [26, c. 210] conducted his report about US teachers' pedagogical decisions and found out that they were affected by their assumptions about the sorts of students in the classroom. Also, Page [26, c. 250] concluded that teachers' common attitude towards students' social and economic backgrounds considerably affected the sort of curriculum that they presented to their students during classes: «Faculty members provide lower-track classes a version of the

knowledge they judge appropriate for regular students. Moreover, their judgments are based on institutionally shared, tacit, sociocultural perceptions: in allocating school knowledge, teachers rely on their view of regular students as "easy-to-teach, from upper-middle-class, largely professional families" [26, c. 270]. Moreover, teachers can intend to retain control and expand student compliance. Therefore, they adapt their assumptions and adjust so-called "defensive teaching" techniques such as facilitating content and prevent their curriculum from controversial topics [22, c. 20].

Context – climate change education in Singapore

To understand the issue better, I believe that I should research the situation towards climate change education in the country in general. Contexts like politics, economics, society, and education are significantly important, especially when it comes to realising how to teach controversial issues like climate change [10, c. 21]. Aspects like the existence of powerful environmental actions or impending environmental threats are connected to the matter of advancing environmental education in a country. For instance, Singapore is a perfect example of a state that can experience the threat from the climate change effect because of its natural and geographical circumstances [22, c. 20]. Therefore, I was looking for information about how the Government supports climate change policies.

As a result, I have found out that the Singapore Government has been especially enthusiastic in advertising and supporting climate change policies, also they have organised a National Climate Change Secretariat (NCCS), which created great significance on anthropogenic causes and origins of climate change: "Average global temperatures and sea levels are expected to rise if carbon emissions from human activities continue to grow unchecked, and extreme weather conditions are likely to become more intense and frequent" [23, c. 4]. Mr Teo Chee Hean, Deputy Prime Minister, Coordinating Minister for National Security and Minister for Home Affairs, at the Committee of Supply Debate, in his speech on climate change by on the 1st of March 2012, has mentioned that the measures have received a big support from the society with almost 86% of the respondents' voices based on public perception inspection conducted by the National Climate Change Secretariat

declaring that they should perform in taking action and response to climate change.

Climate change education was incorporated by the Singapore Ministry of Education into the national geography curricula in the majority of the schools [6, c. 34]. The main focus of the State geography curricula and recommended textbook specifically connected ongoing global warming and climate change to human causes, at the same time explaining the effect of climate change on people, as well as discussing some possible methods to reduce it [6, c. 35]. This curriculum also emphasises the negative effect of climate change on people, for example, sea-level rise, or global methods to decrease greenhouse gas emissions like the Kyoto Protocol. It says that excessive weather conditions, for instance, tropical rains or hurricanes, can be also associated with climate change [32, c. 3]. Moreover, the curriculum gives significant importance to anthropogenic factors, connected with human life activities, like deforestation or fossil fuels burning.

However, during my research, I detected that climate change education is only included in the secondary school curriculum and specifically for those students who have been previously enrolled in the Express and Normal (Academic) courses. For example, Normal (Technical) students, who usually are not very successful academically, are not offered geography in their curriculum as a subject, as a result, their access to knowledge about climate change by means of the school curriculum is officially limited by the Singaporean government [6, c. 18].

Teaching controversial issues

In this part of the article, I would like to analyse different literature concerning teaching controversial issues and to understand the situation better, I will compare Singapore with other countries. Teachers and teacher educators from different countries, like the United States, China, Canada, as well as Singapore, mention quite identical constraints when dealing with controversial issues, such as government censorship and other types of external and internal political tensions from the educational institutions or the society. Studies have demonstrated that teachers' opinions and beliefs about nature and the aim of climate change education have an impact on how they teach it.

For example, in the United Kingdom, one of the findings of a study on three geography teachers demonstrated that these teachers did not share a critical environmental education plan expressed in the national curriculum [10, c. 17]. These three teachers took a neutral position on controversial environmental issues. Also, Brooks [3, c. 17] suggested that the design of the curriculum depends on what teachers valued most about geography. In contrast, some quantitative analysis of geography teachers from 20 different countries [9, c. 89], also, from the United Kingdom [15, c. 56] and across the United States showed that teachers and teacher educators feel quite responsible for the progress of beneficial environmental attitudes and behaviors in schools.

Moreover, schools have a great impact on teachers' curricular decisions and choices. Generally, teachers have concerns about failing to deal with curricular goals or the challenges about teaching different controversial topics or maintaining the correct behavior of students during classes [3, c. 18]. For example, the school curriculum about discipline clashing with the interdisciplinary method that supports the teaching of education for sustainable development [17, c. 16]. It happens because supporters of education for sustainable development advocate the acceptance of open, multiple, and thoughtful inquiry about environmental principles, values, and knowledge [17, c. 21].

Also, just a few studies were found that have analysed how teachers and students from non - western countries but with highly organised and centralised governments understand and teach about controversial issues like climate change. In one of the studies which took place in such context, Chen [7, c. 103] stated that teachers and teacher educators in Beijing, China, were hesitant to examine any of controversial issues especially about politicians and the Communist Party because none of them were a part of the official curriculum established by the Chinese Ministry of Education.

A similar situation was in Singapore, Ho [19, c. 35] stated that teachers of most of the subjects as well as students are not normally discussing controversial issues, such as race or religion, they do not feel comfortable because they are afraid to break

laws, for example, the law of the Maintenance of Religious Harmony. Nevertheless, Ho [20, c. 23] in his recent study argued that the situation has dramatically changed and the appearance of evidently demarcated government-created boundaries between acceptable and unacceptable social discussion has developed into freedom for teachers when they talk about controversial issues, like race, religion or politics.

Implications

This article was mainly focused on teachers that work in Singapore's educational context and my findings hold implications for mostly geography or maybe environmental teacher education in general. Firstly, my findings suggest that in order to increase teachers' knowledge about climate change, it is essential for teacher educators and teachers in general to critically analyse and define the aim of climate change education for their students [22, c. 47].

Secondly, I have come to a conclusion that it is also important for teachers to reflect on how this understanding of the aim of teaching such a topic is formed by what they assume to be the academic capabilities of their students. Also, teachers need to be aware of how they organise their students into groups for different secondary outcomes and careers [3, c. 34]. I believe that climate change education for young students should let them be engaged with global environmental processes. By limiting access to critical discussions about controversial issues like climate change to only academically advanced students can lead to a two-level curriculum system where advanced students benefit more from a variety of essential information than ordinary students.

Conclusion

This article provides some insight into teaching about climate change within an extremely centralised national context. However, this article is limited, it only highlights teachers' beliefs and ideas about teaching controversial issues and does not specifically focus on actual teaching practice, although it discusses an important gap between the ways in which educators teaching different controversial environmental issues and the social and governmental authorities that shape their practice. All in all, the Singaporean teachers took different pedagogical positions that were adjusted to

their beliefs about climate change, hence demonstrating that geography teachers play an essential role in delivering geographical knowledge to their students despite contextual pressures (Morgan, 2006).

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