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Teaching and Learning Geography in pandemic and post-pandemic realities

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Abstract

The COVID-19 pandemic has resulted in unprecedented changes to society and environment presenting challenges to humanity at the individual, local and global scales. These changes have implications for geographical education in terms of the curricular content as well as the way that it is being taught and learnt. We cannot wait for the pandemic to end before we continue our efforts to advance the work of geographical education. Furthermore, the lock-down measures adopted in different places have also resulted in a rapid adoption of online teaching and learning, for people who can afford to do so. In addition, this has drawn attention to the unevenness in access to resources, and the implication for geographical education. In particular, the issues and challenges arising from the pandemic can be included as topics in the geography curricula around the world. This position paper pulls together several strands of work that the Author has been involved in to articulate a response in geography education in the face of the global pandemic and its aftermath. The paper offers implications for geographical education across the individual, local and global scales and suggests ways in which we can respond immediately to this crisis as a community.

Keywords: Consequential Validity, Critical Thinking, Empathy, Preparedness

1. Introduction

The COVID-19 pandemic has caused widespread disruptions to the way of life for many people around the world. These disruptions may have occurred directly as a result of imposed movement restrictions or due to the economic downturns caused by the restrictions and quarantine measures. Nevertheless, these disruptions vary by geography. They occurred suddenly and abruptly across different walks of life in society and across sectors in the economy. For education, these disruptions resulted in different adaptations, mainly and most apparently in the form of conversion of face-to-face lessons to remote teaching. Technology becomes an important enabler to provide continued access to education in these times. The Organisation for Economic Cooperation and Development (OECD) published an article that states that as "school after school shuts down in the face of the Covid-19 crisis (in now more than 140 countries), online learning opportunities have been elevated from a bonus

extracurricular facility to a critical lifeline for education" (OECD, 2020, p. 1).

The problem with a generalised rhetoric on how technology can help with online learning during these pandemic times is the disregard for the unevenness in access to this technology around the world. In the OECD 2018 PISA survey, they found that while the average percentage of students who have access to a computer for school work is close to 90%, in disadvantaged schools around the world, for some countries like Indonesia, this figure is only a little above 20% (OECD, 2020, p. 3).

Although many teachers were rushing to convert their lessons to remote teaching, some teachers have already developed highly engaging and motivating learning activities over the internet. A positive side-effect to this abrupt switch to online teaching is an acceleration in teachers becoming familiar with the technological tools and consequently, a potential for more innovative pedagogical practices.

For geography, a subject that relies heavily on visualisation of concepts like movement, process and systems, online teaching opens some potential to enhance learning. However, challenges from lockdowns are also affecting the way geography is being taught and learned in many places around the world. In some cases, student fieldwork has been curtailed due to the safe distancing measures adopted by the local authorities. Fieldwork which requires students to apply their knowledge in investigating a geographical phenomenon, is a hallmark of a good geographical education (Philips and Johns, 2012). In the absence of physically conducting field investigation, some teachers have adopted virtual reality tools to conduct some of these investigations. However, virtual reality fieldwork will not be able to replicate the senses of touch and smell that constitute important experiences of fieldwork.

While some countries are facing second and third waves of infection, there is a realisation that education will change even after the pandemic ends. Recovery from the pandemic will remain uncertain in two aspects. Firstly, recovery will not return to the normal state but to what many call the "new-normal", referring to the changed socio-economic situations after a global crisis (Buheji and Ahmed, 2020) like COVID-19. Recovery to the "new normal" will also vary by geography. The "new normal" is context dependent and the rates of recovery will also differ from place to place. Indeed, the recovery and its "time-path are linked through the concept of resilience" (Buheji and Ahmed, 2020, p. 160) and resilience is context-dependent.

Amidst these complexities of disruptions due to the pandemic and the uncertainties of recovery to a "new normal", there are opportunities for advancing the work in geographical education. At the point of writing, the global pandemic has gone on for less than a year and there is insufficient empirical data to present a coherent and holistic discussion about the possible impact on geographical education. In order to develop an educated forecast on the possible implications, the Author adopts a critical narrative methodology that integrates existing pieces of work as a way to inform the discussion.

2. Methodology

The Author presents this position piece based on several strands of work that he has worked on in geography education, as a response to the COVID-19 pandemic and its aftermath. The paper is written as a critical narrative by referring to the previous work done within the literature of geographical education.

A critical narrative approach is used in accordance with qualitative inquiry traditions to provide an integrative understanding of the ways that COVID-19 has impacted geography education by examining the existing and related areas of work. Narrative knowing allows for the transformation of knowing into telling, describing the phenomena as they have been lived in peoples' social context (Sonday et al., 2020). In this case, the narrative is built on the vantage point of the Author as a participant observer in the developments in geographical education being one of the co-editors to the flagship journal, International Research in Geographical and Environmental Education, as well as being the co-Chair of the International Geographical Union Commission on Geographical Education.

The paper seeks to address the key question of "What are the implications for teaching and

learning geography given the current Covid-19 global pandemic and its downstream impact?".

In particular, the Author referred to his previous works in the areas of geography education on curriculum, fieldwork, technology, assessment and teacher education, and reflecting on these from the perspective as an active member in the field of geographical education.

3. Implications for geography learners

While the global outbreak of COVID-19 is still affecting most people in one way or another, we cannot wait until the pandemic is over before we think about the "new-normal" for geography education. Indeed, the implications for why, what and how we teach geography can be examined at the individual, local and global scales, both for the pandemic and looking ahead to post-pandemic times.

At an individual level, each teacher or student will experience the effects of the global outbreak differently. At the onset of the pandemic, there was much uncertainty and anxiety as the virus and its spread were just happening and people did not have enough knowledge about the epidemiological and societal impact. Closing schools and converting physical lessons to online learning became a reality for many students and teachers as countries were desperately trying to find ways to control the sharply rising infection numbers. But as the pandemic has become the current reality for the world, there are opportunities for these experiences to shape the content and pedagogy of geography education in the post-pandemic reality.

The COVID-19 pandemic presents opportunities to teaching in both human and physical geography. Chang (2014) argued that the school geography curriculum is often influenced by developments in society, like Marsden's notion of politicisation of school curricula to meet the needs of "significant power groups" (1989, p. 509). Apart from using the examples from the outbreak to teach the geography of diseases and movement across state or international boundaries, the uneven access to resources can also be taught using examples from the pandemic. In addition, how the COVID-19 pandemic will affect fertility rates has implications for "the rate of population aging, shaping future health challenges and economic growth potential across the globe" (Aassve et al., 2020, p. 370). There have also been anecdotes on how the physical environment has improved due to lock down measures and the cessation of international flights. Even though there was some respite from the decreased levels of pollutants in certain places, the environmental change in recent times remain alarming. For instance, although the levels of two major air pollutants have been drastically reduced since lockdown measures began in response to the COVID-19 pandemic, ground-level Ozone has increased in China (Hickey, 2020). These can be useful textbook examples to advance the geographical thinking of students.

The rapid conversion to online learning has also accelerated the adoption of technology for teaching in many places. These create opportunities for many new pedagogies that use technology for geography education. One of the important aims of learning geography is to develop knowledge and understanding of "locations and places in order to set national and international events within a geographical framework and to understand basic spatial relationships" (International Geographic Union – Commission on Geographical Education, 1992; Wu, 2013). Maps have been used traditionally to represent space and help students develop geographical thinking. But the map is a static two-dimensional representation of reality and potentially limits spatial learning. In order to enhance students' geographical skills and the ability to think spatially, various geo-spatial technologies and GIS tools have been developed and used in geography teaching and learning (Bednarz, 2004).

With the rapid adoption of computers in education during the COVID-19 pandemic, the opportunities for more hands-on practice so as to familiarize students with spatial concepts and learning to bring real-world geo-objects into digital data can be harnessed to help them in their geographical thinking. In fact, "[o]nline maps such as Google Map or Microsoft Bing Map share spatial data with the public so everyone can easily access maps and get the necessary information to navigate space in the real world" (Chang and Wu, 2018, p. 39).

Above all, the purpose of learning geography

must be clear for the student to find meaning in the process. Even before the pandemic, scholars have argued that geography "must make a difference to our children's lives in a volatile, uncertain, complex and ambiguous world" (Chang et al., 2018a, p. 212). COVID-19 has certainly taught us that our reality can be volatile, uncertain, complex and ambiguous. While the United Nations 17 Sustainable Development Goals describe an aspiration for a better and more sustainable world, some countries are facing challenges in achieving these goals due to the pandemic (Barbier and Burgess, 2020). A good geography education, therefore, will help our children attain their best potential in the future by grounding their learning in the issues of our times. Given such a lofty ideal, one important consideration is to ensure that our learners have empathy for others.

Kidman and Chang (2020) analysed the body of literature in geographical and environmental education published in the journal International Research in Geographical and Environmental Education on the themes of teaching risks, disasters or crisis managements. The purpose was to understand how geographical education can respond in this time of crisis. Research suggested how pedagogical methods around crisis education needs to be reformed, whereby educational programmes not only have to incorporate content that enables sequential processing within students, but pedagogies should include action-oriented learning and content that sparks interest within students (Kidman and Chang, 2020).

In their analysis, they found that misinformation can help generate negative attitudes such as racism, and education has to incorporate social learning, such as awareness around social media to tackle issues of inclusion and exclusion to generate empathy.

The purpose of education is not just about amassing knowledge but also to live one's full potential. Geography, as a subject provides multiple perspectives in context for our children to succeed in the post-pandemic world.

These opportunities are also available to geography teachers for their professional development. The benefits of using technology for geography education extend beyond instructional uses to that of their own professional development. Indeed, "technology … allows teachers to network and share each other's practices" (Parkinson, 2013, p. 193). These could include the sharing of sources, or even taking part in professional development through a community of practice. Before the pandemic, geography teachers involved in lesson study would have fewer opportunities to observe each other's lessons due to time-tabling constraints. An example of how lesson study is used to improve pedagogical practices in geography lessons was described in Chang et al., 2018b. The school lockdowns provided opportunities for teachers to use the recording function of online platforms like Zoom™ video conferencing to observe each other's lessons with a view to improving their professional practices.

Besides the student and the teachers, the COVID-19 pandemic has also presented opportunities and challenges at the level of a school, the district and even a state or country, mainly through the curriculum.

4. Implication for geography curricula

Geography "offers the opportunity to acquire knowledge and skills to see clearer how things are running on planet earth and what we can do differently on a local as well as on a global scale" (Béneker and van der Schee, 2015, p. 287). In a world where environmental change is occurring in unparalleled volume, volatility, variety and velocity, the imperative to educate our children about the knowledge, skills and actions that will enable them to engage environmental issues of their time cannot be over emphasized. This is made more complicated by the COVID-19 pandemic.

There will certainly be changes to the curricular content so that the subject is more relevant to issues in a post-pandemic world, but geographical education cannot merely be providing access to geographical knowledge. It has to transform the child from a state of daily routine and encounters to one where the "knowledge empowers the child to imagine his or her own future" (Chang et al., 2018c, p. 12). In essence, geography education should allow the student to engage new information critically, asks questions about the information based on geograph-

ical knowledge and develop new ways of thinking, powerful ways of analysing, explaining and understanding, take control of his/her own knowledge and take part in international debates on issues, thereby enabling him/her to succeed in the world (Maude, 2017).

Chang (2014) posed a couple of cautionary comments in a critical review of the Singapore geography curriculum that may be useful for reference here. The tight curation of topics due to curriculum time could have serious implications on the students' geographical learning experience. Chang (2014) cautioned against an "abridged version" of geography where "students' imagination of the world [is] limited by the range of topics that they have learned" (Chang, 2014, p. 37). While we attempt to include contemporary topics like COVID-19 and its impact, we may lose some aspects of geography education that are important for an overall holistic geography learning experience. A balanced approach in curating the topics become crucial.

Furthermore, there are places that may offer geography as a stand-alone subject, while others may not even offer geography as a primary curriculum (Bourke and Lane, 2017) and yet some may offer it as an integrated subject with social studies, environmental studies or citizenship studies. These purposes and concepts may not even be explicit, but at least, it is inevitable for the substantive content to include topics and examples related to the pandemic, taking into consideration the point about balancing a range of topics in the previous paragraph.

In addition, there is an assumption that there is a close relationship between the curriculum and what is being taught and learned in the classroom. Unfortunately, this is far from the reality as some schools in disadvantaged districts have difficulty to gain access to the curricular resources for the curriculum to be taught effectively. A United Nations Educational, Scientific and Cultural Organization (UNESCO) study has found that pupils in the poorest countries are suffering from a lack of basic textbooks, with examples such as reading books in Cameroon being shared between 12 students (UNESCO, 2016).

Even if we have figured out a way to make access to resources such as textbooks more equitable, schools in different jurisdictions have to also consider teachers' preparedness to enact these changed curricula and in using different technological tools. National curricula do not translate into classroom practice magically but requires the geography teacher to decide how the lessons are sequenced; what activities need to be designed; which resources are to be chosen; what technology is used to support the learning and how they would assess learning (Chang and Wu, 2018). Teachers can design meaningful learning activities through amassing experience and continual professional development to develop deep pedagogical content knowledge (PCK) (Shulman, 1986). Further, an "awareness of common misconceptions and ways of looking at them; the importance of forging connections among different content-based ideas, students' prior knowledge, alternative teaching strategies, and the flexibility that comes from exploring alternative ways of looking at the same idea or problem are all essential for effective teaching" (Koehler and Mishra, 2009, p. 64).

While PCK allows the teachers to select materials and teach a topic effectively, a range of pedagogical moves is still needed to bring the learning beyond knowledge acquisition. Favier and van der Schee (2009) propose that there is a need to shift from "acquisition of knowledge to the development of skills required to gain knowledge" (Favier and van der Schee, 2009, p. 261). Furthermore, as argued by Kidman and Chang (2020), these skills should also enable the student to develop empathy. By extension, there is also a requirement for effective assessment to support the delivery of the curriculum. In addition to testing a student's geographical knowledge, teachers are concerned with assessing students' acquisition of skills that will enable them to engage the environment that they are living in better, and consequently help them develop empathy for other people.

There is variation in the percentage of students in schools whose principal agreed or strongly agreed that teachers have the necessary technical and pedagogical skills to integrate digital devices into instruction, according to the PISA 2018 study. While the world average sits at slightly above 60% for disadvantaged schools, the figure for Argentina was between 30% to 40% (OECD, 2020, p. 7). In other words, there

must be deliberate efforts to ensure that access to teacher professional development is made available to engage the questions of the "what", "why" and "how" of curriculum planning and instruction (Chang, 2012). This is explained through considering what they need to teach; what is good to teach, what is important to teach and what is crucial to teach (Chang, 2012, p. 292).

5. Implication for geography education around the world

Kidman and Chang (2020) have shown how pedagogies involving inquiry-based practices can help develop an education that better prepares students for a crisis. COVID-19 is a crisis that is not just an epidemiological phenomenon but a societal one as well. We must teach our students empathy. Kidman and Chang (2020) offered the example of how bystanders were apathetic and did not offer help when a middle-aged male collapsed from a cardiac episode in Sydney on 28 January 2020, fearing perhaps they would catch the coronavirus as he was of Chinese descent. Misconceptions can be linked to misinformation. Those were the early days when people did not understand the epidemiology of the virus well. Furthermore, geographical education has the potential for students to discern and verify if the information that they have come to know is reliable. Nevertheless, it shows us the need to develop empathy and to include aspects of social learning in our education even before the crisis hits. "We need to teach students and the general public that, in times of crisis, people's abilities are compromised, and we say and do things we would not normally say or do. We need to be aware of this and be equipped to perform in these times of uncertainty and pressure" (Kidman and Chang, 2020, p. 110). This need not be the sole responsibility of the school geography subject but there are many opportunities to incorporate these into the curriculum. Perhaps a good start will be to understand how geography is taught around the world and learn from examples that best suit one's context and be able to connect to the issues globally.

The school geography subject differs vastly around the world, as there are "many factors (e.g., geographical location) and contexts (e.g., political, cultural)" that countries have to consider when planning and developing their geography curricula (Chang et al., 2019, p. 55). This implies that the content of the school geography subject in each country may differ at the national and regional levels and even among schools in the same local area (Bourke and Lane, 2017). Nevertheless, there are core similarities to geography curricula around the world as proposed by Chang et al. (2019), who suggest that geography curricula are described by a broad vision of educating the child for the future. The curriculum is often organised along a spectrum of scales from local to international and from the child to the community. This is aligned to the broader vision and to educating a geography informed person across the scales. As a result, the curriculum is often structured around the purpose, the organising concepts and the substantive content. This can be illustrated with Figure 1.

COVID-19 has forced us to reconsider the content for some components of the framework. For instance, we will need to re-examine the purpose of geographical education. While purposeful statements like "caring for the environment", "understanding human-nature relationships" and "how humans use space" may not change, there will be a need to consider these purpose statements within the context of changed realities due to the pandemic. While key organising concepts such as "space", "place", "interactions" and "scale" may not differ due to COVID-19, there may be more emphasis on concepts such as "change". In particular, the substantive content of geography curricula may very likely include topics related to the COVID-19 pandemic as it is an unprecedented phenomenon.

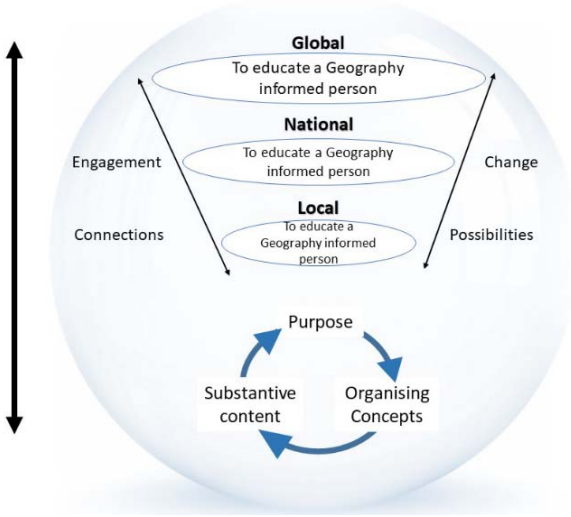

Figure 1. Framework to describe school geography curricula around the world. Source: Chang et al., 2019, p. 64.

The framework for comparing geography curricula is just a first step toward providing a vocabulary for geography educators around the world to share and exchange ideas and best practices. The common goal is, of course, to help our students learn better both in the pandemic and post-pandemic world. The IGU-CGE has developed a webpage that provides links to teaching resources that geography educators can refer to during these difficult times (https://www.igu-cge.org/covid-resources/).

The page contains information on a description of the resources, the time and duration of the availability, the language that it was published in, the names of the contributor and of course the URL of the resource.

Globally, there is a need to have an awareness of what is happening elsewhere. This can be supported by the sharing of resources and best practices. Rallying like-minded geography educator experts to support student learning in the pandemic and post-pandemic world is an opportunity for geography education.

6. Conclusion

The inevitable consequence of a sudden and abrupt disruption to the way society functions around the world will have an indelible impact on geography education. Such an impact can occur at the individual, local and global levels.

For the students and teachers, the substantive content of the geography subject may be changed in the future to include the topic on the COVID-19 pandemic and its downstream impact. Student learning will not be limited to knowledge about the phenomenon but also skills to engage discussions and even develop empathy so that they become better prepared to face future crises. Accompanying that will be changes to the instructional and assessment methods. While online learning becomes prevalent, it also provides opportunities for teachers' professional development, such as the ability to observe each other's lessons through recorded video conferencing functionalities.

At the local or state level, the impact on the geography curriculum will largely navigate around the need to balance substantive content well when including new topics so that the overall contiguity of the geography subject is not compromised. A question remains on how to find the right balance to incorporate social learning as well, including tying it at different perspectives and standards of curricula around the world. There are also implications for jurisdictions to consider access to resources, a robust teacher preparation and professional development programmes to meet these needs.

At the global level, there are many opportunities to share best practices in teaching and learning geography. The Author highlighted a few examples and calls on geography educators around the world to participate in this endeavour as a community.

While we are still uncertain of the shape and speed of recovery once the pandemic is over, we can already begin to work on some of the areas that Author has highlighted. Aesop's fable about the grasshopper and the ants best illustrates the need to act now.

A grasshopper spent his summer days making music and when he saw the ants marching past him, carrying food to store in their nest, he laughed to himself thinking "How foolish to waste such a beautiful summer day on work. There is enough time to worry about winter when the first snow falls". However, when the first snow fell, the grasshopper could find noth-

ing to eat as he was making music all summer long and didn't store food like the ants did.

Benjamin Franklin once said: "Don't put off until tomorrow what you can do today". We have enough tools to get us started on advancing the work in geographical education for the post-pandemic reality. As the current situation of the world will continue to change despite the ongoing pandemic, it is imperative for geography education to be pushed forward instead of remaining at a standstill.

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