Geography Education is a Global Responsibility

It is all about the Earth*

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Abstract

Besides the traditional level of guiding the youngest generations to learn geography and be good citizens, there is an important new trend in informal education. A global society is becoming integrated through digital interaction and cooperation to resolve problems that are geographic in nature. Research communities of practice in geography education must guide what are identified as Crowd Collaborative Geography Communities (CCGC). They have to be with geospatial technologies to encourage the exercise of a common global responsibility.

Key Words: geography education, globalization, global citizenship

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TOWARD A GLOBAL CITIZENSHIP

Since Gerber's ideas on globalization and geographical education[1] were presented to emphasize the interdependence between people and environments, people with other people, and environments with environments (Gerber, 2003), there has been a strong academic tendency among geography educators to place sustainable development as the core concept to use the Earth and preserve it for future generation. One of these approaches is based upon a clear ecological influence which theorizes citizenship as part of an environmental or green perspective (Orr, 1992).

The development of an 'environmental emergency' in specific locations and regions that exceeded views of national consequences toward more global dramatic impacts have created a sense of initial cosmopolitan perception of citizenship. The nuclear disaster in Chernobyl and more recently in Fukushima, the permanent rainforest destruction in the Amazon, the regional anomaly of El Niño Southern Oscillation with continental effects, the melted ice caps in the Arctic, and the retreating glaciers in the Himalayan region like in other zones of the world, are examples of cases that exceed territorial dimensions and national preoccupation. However, this increasing global perception of natural problems caused mainly by human actions is also recognized as pertaining in its origin to local or regional disruptions.

The cosmopolitan perception of citizenship has a faulty start when individuals, institutions and organizations in different countries do not resolve local or regional environmental emergencies which also have continental or transcontinental effects. This defective initiation of a cosmopolitan perception has also a broken ending when individuals and societies see these emergencies as someone else's problems which in fact require a critical need for recognition as well as urgent and effective global actions. It is the Earth, our only spaceship we have, that needs repair to find a dynamic equilibrium.

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The evident lack of responsibility by the society as a whole places the cosmopolitan concept out of work, because society has not learned deeply enough the spatial connotation of our planet. Therefore, we need a more direct emphasis on the comprehension, as a world society, about the spatial dimensions and interactions of the natural components. The new century has already identified multiple dimensions with the growing presence of a world society in which nationality has been transformed into cosmopolitan citizenship. The latter concept is getting to small to fulfill the responsibility that the world society has today.

The world society should be denoted as global society because globalization is immersed in spatial relationships. In this regard, I agree with Held and Guibernau (2001) when they point out that globalization is fundamentally a spatial phenomenon. Nevertheless, the global society requires first to understand the natural processes; the main engines that have allowed mankind to inhabit the Earth. Thus, individuals pertaining to different nations within the global society can be trained as global citizens in the way Noddings (2005) considers educating citizens for global awareness. It is my intention to address the urgent need for the preparation of a global citizen by way of a new geography education model. One critical question is what would help to reach the goal of global citizenship? The main condition to start the training process of future global citizens is to facilitate the guidance about the basic obligations with the local environments. They are integral parts of territorial commitments and global responsibilities.

FORMAL GEOGRAPHY EDUCATION

Geography education has been mainly developed in primary and secondary schools around the world and is still a subfield in geography that is identified with structured teaching and learning through curriculum and assessment. The main and common objective behind national standards in geography put in practice by some countries has been for the purpose of preparing students for responsible citizenship, but there is not clear and common definition of what global citizenship condition is all about. Let us cite a few cases to find out whether this concept has different connotations or similar significance. In their chapter on Citizenship: the role of geography, Machon and Walkington (2000) point out that curriculum requirements for citizenship education in the UK encourage students to participate and reveals a clear agenda for active learning. Therefore, they conclude that 'deep citizenship' must emphasize reflection of individuals' actions and understand the importance of actions at the local level to measure the dimension of our global future. Another perspective based on education for sustainable development is informed and critical citizenship education in Singapore. Chang (2011) points out that the national curriculum is strong in what and how to teach geography, but assessment is also a major concern because of the critical analysis on how to respond to the themes in geography and in the issues relevant to citizen of the world. On the other hand, Portugal reorganized school geography in terms of giving an essential contribution to citizenship education. Esteves (2012) presents the "geographical competent citizen" as the one that has certain spatial skills and understand mostly territorial, cultural and individual identities, but the global perception of citizenship is not developed.

The majority of researchers and practitioners of geography education are more concentrated on what and how to teach. Curriculum, instructional materials, and assessment are the core of geography education which in some way will take care of an informed and responsible citizen. Whether the knowledge assimilated by their students allows them to fulfill the ultimate goal of being good citizens or just being good repositories of geographic ideas is not a question that is answered with precision. Furthermore, the global conception of citizen is even more distant and not central to any curriculum.

As a good example of an important guidance for the future of geography education, the Road Map for 21st Century Geography Education (2013) and its reports do not answer this critical question. Its projection is for the United States of America's education in geography that pays little attention to similar experiences around the world. Consequently, it is necessary to act as global citizens because it is not how much and how well practitioners teach geography or how efficiently high school graduates are prepared to do geographic reasoning. It is about preparing our youngsters to be innovators in the process of finding a solid and permanent solution to the continuous disruption man is making to the Earth. First of all, it requires a high level of global-mindedness which Hett (1993) points out as a well-connected world community with a sense of common responsibility. Second, it entails an obligation to guide students "to learn how to learn" and how to be creative to disentangle the man-nature disorder which Morgan (2012) imagines resolving it with the process of teaching geography as if the planet matters.

As one of the classical strategies to complement traditional instruction in geography, field trips and field work activities certainly help primary and secondary students to learn about the environment. Numerous

examples of these activities create the feeling among practitioners that they are complying with a good sustainable development agenda, yet it requires the consensus and participation of the entire community to understand and practice Gerber's idea on globalization and geographical education. One good example of this approach is the Water School for a Living Yangtze in China where teachers and students are integrated with the local communities and international organizations to practice locally and think globally1. It is the formal tutoring integrated with non-formal guidance and informal self-learning process what counts in this common responsibility to be creative for the purpose of resolving environmental disruptions. Part of this formal education combined with informal and non-formal learning has been expanded through Internet and today this example of geography education is possible to be seen in some specific web pages on the World Wide Web (WWW). However, the common responsibility to be creative and proactive in order to prevent and resolve environmental disruptions is falling short. There is still a need for a major worldwide integration that ultimately should generate collaboration.

DIGITAL WORLD INTEGRATION

Societies around the world have faced with more or less determination the impact of environmental disruptions being triggered by either natural disasters or inappropriate human intervention. We can complete the scene of world issues when adding all the social disruptions due to political conflicts, ethnic clashes and, ultimately, wars. It goes without saying that the continuous improvement of information communication technologies (ICTs) through Internet has created a new global perspective to deal with environmental and social disorders in our planet. We have to recognize that a great deal of population around the world is part of the digital divide when we need to analyze the level of global integration through ICTs. Nevertheless, people from different regions and countries have come closer through social contacts, following the increasing creation of the most diverse forms of Internet networks. This new form of social integration, which is breaking down frontiers and territorial isolation, has paved the way to new forms of national and international interactions in the WWW to discuss and even resolve environmental disorders and social commotions.

Despite the effect of language barriers, cultural differences and religious divergences, populations in different parts of the world are dynamically acting by using ICTs in multiple forms. It is the presence of a new and wide-reaching form of learning that crosses all levels of the global society. Not being new, informal learning has been transformed into a powerful mechanism for self-independence. It has allowed people to reach new forms of power practiced through self-learning activities.

Self-learning education has been one of the great benefit that people around the world has experienced with the development of ICTs. If we accept Rogers' new paradigm (2004) that informal education is in fact informal learning; being all that subsidiary knowledge, unstructured, but the most extensive and intensive of all learning that each individual practice every day, non-formal education is the flexible acquisition of knowledge through a sort of adaptable schooling in adult communities. Whether informal education and non-formal education are practiced with simple procedures to assimilate basic knowledge or are exercised with complex software to build advanced knowledge, the final outcome is the individual and collective efforts to incidental learning to resolve problems. In both cases digital integration takes an important role because new knowledge is structured or semi-structured by ways of ICT applications.

New and old generations build information and take decisions to deal with those environmental and social syndromes I announced earlier. However, for the purpose of this paper I would like to focus on the resolution of problems which affect the Earth and are generally identified as environmental disruptions. Some of them, of course, are the result of social commotions; however, the majority can be classified as pertaining to natural hazards or human impacts due to economic exploitation of natural resources.

When a natural disaster takes place such the earthquake-tsumani-nuclear catastrophe that occurred in Japan in 2010, two typical reactions are part of the global interaction today. First, global information is carried by news media almost instantly. Then, social networks actively respond with all sorts of comments, suggestions, and reactions. Finally, it is just a matter of time to see how these "global citizens" forget the issue. Similar reactions are observed when environmental disruptions caused by human error are widely known. The oil spills in the Gulf of Mexico is a typical example of this kind of environmental impact. Severe mining exploitations that cause, among others, chemical contamination to soil and water are also examples of environmental disequilibrium.

Preventing human tragedies could engage global citizens in rapid action if they are exposed to what I call shared geography education. Preventing natural disaster caused by improper human action might also urge a new breed of global citizens to engage in much strong-

er action if they 'learn geography to care for the planet' through informal education. Geography educators should guide every citizen to be a responsible global individual. One who can recognize where and how a natural disaster can be prevented to avoid a human tragedy or to respond to possible incorrect human actions caused by economic exploitations that might accelerate an environmental collapse.

Crowd Collaborative Community (CCC) is the initial engine and source that geography educators should analyze to guide and prepare global citizens. But first, we need to understand the CCC concept and create a bridge between the CCC and the one I identify as Crowd Collaborative Geography Community (CCGC). Like a form of global knowledge with wide business applications, the CCC has some history since the late 1980s when it was designed as an online crowdsourcing to deal with the generation of data for large and complex computing solutions. More experiences have followed which have exceeded the generation of data as one of the main goals.

There are examples of CCC experiences such as Wikipedia with its large crowd of international editors or the National Geographic project organizing a crowd of about 28,000 online participants using satellite imagery of Mongolia to search for Genghis Khan's tomb. Boudreau and Lakhani (2013) citing these examples also point out that technology is the key component of crowdsourcing's capacity, yet still too new and too early to achieve its full potential. Even more effective examples indirectly related to geography education are crowdmaps cited by Kamel Boulos et al. (2011) which illustrate the 'power of the crowds' and citizen engagement and participation in several health/environmental incidents. One of these examples is the crowd-sourced radiation map from the Fukushima I Nuclear Power Plant presented by Saenz (2011). The crowdmaps are results of crowd experiences about geographic relationships. As such these experiences show a slight transformation of the CCC concept. It preserves the initial conditions of diversity, extensive task modularization, and technology application. It also adds a direct connection to the Earth phenomena that was not part of the initial CCC concept, yet it does not include the advance condition of a deep sense of dependence to a final goal for survival. Geography and geography education intervention start here to add that sense of reliance toward the ultimate objective which is the preservation of the Earth for mankind. Geography educators, organized as an active network in a Community of Practice (CP), initiate the process of coordination and leadership. Then, the CCGC concept takes its own and more identifiable form (Figure 1).

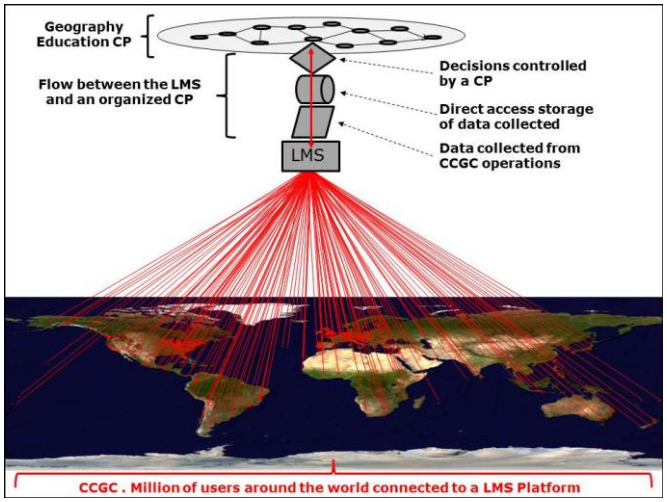


Figure 1. CCGC. Spatial structure and virtual connections to CP through common LMS Platform and Portal

It is quite possible that geography education might have one of the most important teaching and learning experiences of the 21st century to be carried out through the CCGC concept. The tool is the ICT which can be used to conduct an extraordinary informal education in geography with the assistance and application of geospatial technologies. For this purpose the digital immigrants and the digital natives, as defined by Prensky (2001), have the capacity to absorb new levels of knowledge and the ability to conduct worldwide collaborative community work. Nevertheless, it is important to consider one more step in the process of reaching the highest responsibility of all global citizens. This step deals with the active influence of a community of practice catalyzed by geospatial technologies.

COMMUNITY OF PRACTICE AND GEOSPATIAL TECHNOLOGIES

The increasing digital world integration shaped by the ICT revolution is diffusing to all level of society organizations in which social networks are also combined with professional and scientific networking. From Web 1.0, a read-only information flow, to Web 2.0, ICT has produced new advances along the read-write Web. Hanna (2011) mentions the importance of network-centric operations and virtual organizations as two of the most important results of the ICT revolution. The CCC is a typical example of virtual organization that makes use of the ICT to enhance interaction and extensive task modularization. The CCGC could show the same conditions and possibly adding certain level of cohesiveness that is totally absent in any CCC.

Any CCGC should be characterized by a massive number of worldwide participants who accumulate and

reorganize knowledge by sharing geographic information in open sources. As in the case of a CCC, any CCGC is a virtual organization with horizontal domination rather than vertical power distribution. Nonetheless, it requires initial intervention and a call for action by innovators who are residing in a specific community of practice. They are professionals or scientific teams that create new procedures to induce innovations and subsequent actions in order to resolve complex geographic issues affecting the Earth. Therefore, a community of practice acts as a network-centric organization to infuse certain level of cohesiveness in a CCGC. This cohesion allows better performance to resolve a complex geographic problem. Network centricity is a special condition developed by a community of practice composed of well trained professionals and scientists who are involved in value creation processes.

A community of practice is built when a group of specialists in some field of knowledge starts a process of knowledge construction and diffusion of knowledge among its members. Initially, knowledge construction resembles Mode I knowledge indicated by Gibbons et al. (1994) which is disciplinary-based, hierarchical and convergent. Mode II knowledge might develop whether the community migrates to trans-disciplinary exercises to analyze specific problems or presents a more heterogeneous condition characterized by heterarchical form. I visualize the presence of some communities of practice in geography education, yet they are still experiencing Mode I knowledge. It is necessary to develop more divergent-but-coexistent patterns of relations in which knowledge and practice have multiple sources of operations, skills, and tools. In order to accomplish this level of organization it is crucial to open the door to divergent processes of thinking which leads to the value creation progression and, ultimately, to dynamic network construction or networking.

I would like to agree with some scholars who see network and community as two aspects of social structures in which learning takes place (Wenger, Trayner, de Latt, 2011). However, I disagree with their perspective about the critical importance of any network as the tool to optimize the connectivity among people. In fact, a network is a set of nodes and links as defined by the graph theory in mathematics, but the ultimate objective of such a virtual and dynamic structure is to facilitate interaction. A group interaction, as in the case of a social network, is not similar to a team interaction of a scientific network. The latter is built on the principle of trust shared by a given number of participants who maintain constant collaboration. As a direct consequence, a scientific network creates increasing cohesiveness; important characteristic of a community of practice that is not present in a social network.

Knowledge creation and knowledge diffusion are important processes of any social network, but knowledge transduction process; a way of intellectual work about how forms of relational thinking emerges, is intrinsic to scientific networks. It is followed by innovation which is the most important objective of a community of practice. Above all, transduction is ultimately a critical step in the preparation of network-centric geography communities necessary to tackle complex environmental problems that are affecting the Earth in multiple locations.

Today, I observe our geography education communities of practice more as social networks than scientific networks. Consequently, there is an urgent need for transformation of our worldwide scientific community of geography educators to be able to conduct a revolutionary global geography learning and teaching process. It has been my proposition to introduce a new model for geography education that complements the one sustained by formal education of younger generations through pedagogy and structured curriculum. This new model is based upon non-formal guidance and informal self-learning process performed by new global citizens who are participants of CCGC through an andragogical environment (Figure 2). The proposed implementation requires a new conception in geography education which should be guided entirely by ICTs and Geospatial Technologies (GST).

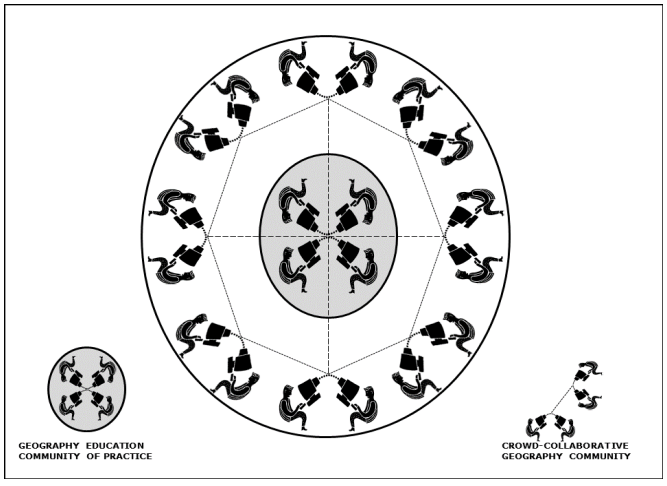


Figure 2. The andragogical environment of CCGC and Geography Education Community of Practice

The importance of network-centric geography communities, where innovators reside and are nurtured, is crucial for the successful implementation of the new model. Similar to crowd-powered innovation in business as explained by Boudreau and Lakhani (2013) it is quite possible to support young crowd-innovators or

'complementors' to assist CCGC participants in the resolution of complex geographic issues affecting the Earth. This type of innovators will create new software apps and enhance GST complementary applications to be displayed on special platforms[2].

In teaming up with a CCGC, a network-centric geography community may create conditions to use a special crowdsourcing GST platform, allowing CCGC participants to learn the use of GST complementary applications. Thus, members of a massive worldwide crowd-collaborative community could be invited to be part of an active global citizenship project to resolve local and regional geographic problems that are affecting the environmental equilibrium of the Earth.

CLOSING REMARKS

Every learning facilitator and possibly most of the teaching instructors know that as practitioners of geography they have a great responsibility. Geography educators should be prepared to teach geographic knowledge, but in the process they isolate the ultimate goal of teaching and learning about the Earth to structured curriculum. The final and most extraordinary goal is obscured by pedagogical operations; most of them carried out by traditional teaching, that serve the purpose of the status quo in formal education. The proposition presented in this article does not intend to break with the things the way they presently are in any school system around the world. On the contrary, formal education might be transformed by the new relationship with informal and no-formal self-learning processes. Finally, the model represents a bridge to facilitate the transition to prepare a new breed of global residents of the Earth. The technological advances are good enough to be the catalytic agents to begin the journey for responsible occupation of the only planet we can inhabit so far. It is all about the Earth.

[1] The Water School for a Living Yangtze in China is a project is a component of the International Water School Program initiated in Austria by Swarovski Company. The project has been developed in two phases since 2008. http://waterschool.cn/projects/water-school-project/why-yangtze/

[2] Geospatial Technologies (GST) are defined as an advanced body of knowledge developed by practitioners of Geographic Information Systems (GIS), Global Positioning System (GPS), Remote Sensing (RS), and Digital Cartography (DC). The use of these electronic systems which comprise a variety of tools allows practitioners to obtain spatial databases based upon specific techniques. Quantitative and qualitative analysis follow to interpret the distribution and transformation of spatial phenomena on a geographic context through geospatial visualization.

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