

PROGRESS MAP FOR GEOGRAPHY IN CHILE: CARTOGRAPHIC MATERIALS IN PRIMARY AND SECONDARY SCHOOLS

Fabián Araya Palacios
Departamento de Ciencias Sociales
Universidad de La Serena
Campus Andrés Bello
La Serena- Chile
Casilla N° 599
faraya@userena.cl

Abstract

Introduction

This Paper discusses the concept of progress maps in the geographic education in Chile. These maps describe the typical sequence of learning development in certain areas or domains considered essential components for education of students at each curriculum level. This description is simple and concise in order to everyone can share this vision about how learning progresses in the course of twelve years of schooling. The purpose is to make teachers, students and parents understand the meaning of improving in a specific domain of learning. They establish connection between curriculum and evaluation, directing toward what is important to evaluate and giving common criteria to observe and describe qualitatively the learning achieved. They are not a new curriculum, since they do not promote other learning. On the contrary, it is hoped that the maps deepen the curriculum implementation, stimulating the observation of key competences that have to develop (Ministry of Education, 2009).

These materials express learning expectation for this curriculum subject in the form of a continuum which primary and secondary schools. The desired competences are expressed in terms of seven levels of progress that make up the progress map, including examples of how students can demonstrate these competences with cartographic materials. Note is taken of the complexity of the construction process and how competences are agreed for each level, including mention of the difficulties involved.

Objectives

- Revise the concept of progress maps and describes the preparing one of maps in the sector of geography.
- Describes competences of seven levels of progress map in geography.
- Develop cartographic materials made for students in different geographic subfields and levels.

Methodology

In our job we tackle the procedure proposals which allow us to produce new views of the cartographic materials, considering its educational value for each level of progress map. In the first case we try to set out a cartographic view of the park, an exercise based on direct observation. In the second case we look at the possibilities which allow the map to be seen as a document which is open to reinterpretation from progress map.

Results

The sequencing of cartographic materials in the teaching-learning process is always a relative question, the development of determined techniques makes progress possible in other more complicated areas thus forming a coherent chain. Of course if we don't begin with a cartographic work basis, it is difficult to make progress in respect of complexity. Progress map proposes sequencing ideas in respect of seven levels in the learning of geography.

In the map, integrated comprehension of several components of geographic spaces, more than the identification of isolated elements, is valued. There is also an assumption that geography comes into existence through observation and interpretation of geographic process in a certain territory, applying this principle to the learning of geography. Besides, the described progression of learning reveals that students recognize they live in a geographic space that is dynamic, interdependent and socially built, in which every person is responsible for the environmental sustainability of the planet and for the care of belongingness places.

Conclusions

Cartographic materials are one of the best resources Geography teachers have for fostering conceptualization processes in the classroom. Observing, decoding and interpreting the information on maps, charts, plans and satellite images offers interesting teaching opportunities that closely reflect the job of progress maps. Graphic schematization as a process of high didactic value, due to its quality of being a language simplifier in the processing of spatial information.

Progress Map for geography in Chile: cartographic materials in primary and secondary schools

Introduction

The curriculum of History, Geography and Social Sciences has the purpose of students develop knowledge, skills and dispositions that allow them to organize an understanding of the society, either throughout of its history or in the present, and prepare them to have a responsible social behavior. It is expected that students are able

to comprehend the connection between society and natural environment and they appreciate the significance of the environmental balance (Eflin, 2001).

The curriculum also promotes development of the capacity of identifying, researching and analyze with precision problems concerning historical, geographic and social reality. The learning of History, Geography and Social Sciences has been divided into three Progress Maps: Society in Historical Perspective, Geographic Space and Democracy and Development. The first two maps explain the learning progression mainly related to the discipline of History and Geography. The third map, Democracy and Development, describes the learning relating to political coexistence and dynamics of sustainable development and skills to induce citizens to be active.

1. Spatial Geographic Progress Map

This map describes learning that progress around three aspects developing in an interrelation:

1.1 Spatial location and systematic comprehension of geographic space: it refers to the knowledge of the location and spatial distribution of elements and Geographic process and the comprehension of spatial dynamics of a certain territory, incorporating several variables like natural, social, economic, political and cultural ones. This aspect starts from a general geographic vision of the Earth and the identification of simple connection among geographic elements; and then, it evolves toward a more detailed and systematic knowledge of the planet and understanding of the interrelation among different variables in the shape of geographic space (Lidstone, 2006).

1.2 Analysis abilities of geographic space: it refers to the development of abilities related to the direct observation and interpretation of Geographic space or through different information sources, applying geographic categories more and more complex, in order to analyze significance geographic problems, formulating hypothesis about their causes and their territorial impact (Batllori, 2002).

1.3 Valuing and responsible attitude toward geographic space: it refers to the development of attitudes of being careful and responsible with the Geographic space, realizing its role in the environmental sustainability and in valuing belongingness places, not only one's town, but also the whole planet. In the map "Geographic Space" there is the assumption that territorial order is a human construction, which can be modified for the benefit of quality of life (Stoltman, 2004).

The maps illustrate learning in seven levels, from 1st grade of elementary school to 4th grade of secondary school. Each level is associated with what students are expected to be able to achieve at the end of certain school years. For instance, the level 1 (one) corresponds to the achievement expected from most of the children at the end of 2nd grade of elementary school; the level 2 (two) corresponds to the end of 4th grade of

elementary school and so on every two years. The last level 7 (seven) describes the learning achieved by a student who stands out from others at the moment of leaving school, that is to say, a student who has exceeded the 6th level expectations. However, reality demonstrates that different level students coexist in the same grade. Because of this, the work intends to determine the level of learning for each student and which aim they have to move forward and then to guide the pedagogical activities for improving.

The following pages show the Map of Geographic Space. At first, there is a synthetic presentation of all the levels. Afterwards, each level is detailed, starting from its description, some examples of performance about how to recognize this level of learning, and one or two examples of worksheet done by students from several schools, and straight after the comments on why student's worksheet is "in" the level.

2. Levels for Spatial Geographic Progress Map

Level 7

At this level, students are expected to be able to establish connections among several Geographic variables in order to explain the spatial dynamics in certain territory. They should be able to interpret and incorporate information from different sources and scales for analyzing social phenomena and problems, taking into account social, historical and economic variables, as well as formulating hypothesis about its causes and consequences. Students can recognize the relevance of the territorial planning as a rationing instrument of taking up space and evaluates the scope of the environmental policy.

Level 6

At this level, students can depict the insertion of a country and its region in the World and the historical changes in the shape of the Geographic space in Chile. They should cover the interconnection among the economic process, the composition of the geographic space and the dynamics of the population. Students are able to integrate and incorporate information from various sources and at different scales in order to analyze phenomena and spatial problems, taking into account social, historical and economic variables. They can set out the challenges for sustainability because of globalization and asses the environmental policy and citizens' participation in these subjects.

Level 5

At this level, students are expected to be able to describe world population according to its distribution and cultural diversity; as well, to describe different regions in accordance with development indicators and demographic dynamics. They can acknowledge that territories take shape through process of cooperation and conflict among societies and that spatial dynamics of a territory form throughout history. Students are able to

interpret information taken from different sources in order to analyze changes and trends of geographic space's configuration. They can characterize social and environmental problems of big cities and value measures taken for improving the quality of life.

Level 4

At this level, the student is distinguishing spatial distribution of natural process in the Earth and recognizes that its existence is related to dynamics of geosystem. Is able to understand that adaptation processes of human beings have been altered through the time, causing changes in the geographic space. Can select sources of relevant information and interpret Geographic information to analyze dynamism, magnitude and spatial scope of natural and historical process. The student is able to comprehend that Industrial Revolution produced a higher impact of human activity on the planet and value the current environmental conscience.

Level 3

At this level, the student is recognizing outstanding natural and human features of America and Chile. Is able to understand that geographic space is distinguished by establishing connections between natural and human features. The student can extract information from regular and thematic maps and from written and visual sources in order to determine natural and human features of certain geographic spaces. Is able to recognize the importance of reducing negative consequences of human activity on the environment.

Level 2

At this level, the students can locate Chile and its neighboring countries in the political map and distinguish big natural zones of the country. They are expected to be able to realize existence of different types of human settlements and possible complementary relationship among them. They can use images and simple text for describing characteristics of different human settlements and their connection with the environment. They are able to understand those human groups always affect the place where they are living.

Level 1

At this level, students can locate continents, oceans and climatic zones of the planet. They are able to use relative location categories and cardinal point to get bearing at geographic space. They can utilize images for describing observable features of different landscapes, making some simple connection of proximity, direction and distribution. Look after belongingness places.

3. Examples and comments for levels.

3.1. Level 1. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Notice the climatic zones in the globe.

Identify continents and oceans in the map.

Follow a simple route with a map of their neighborhood.

Describe displacement in the space using familiar points of reference and categories of relative position (for instance: right, left, up, down, etc.)

Examples of students' worksheet . The task: The students received a city map showing different buildings, as well as public and private places (people's home). The map included a compass card. Afterwards they had to for answer four questions. In two questions they had to locate different elements in the map using cardinal points and relative points of reference. The third question described a route, and then students had to explain where the route led to. Finally, in the fourth question, students had to give instructions to move from one place to another.



Figure 1. City map: different buildings as public and private places.

Example of worksheet at the level. Look at the map and answers:

If Juan leaves his home, goes up the road till he gets “Las Camelias” street, he turns right there and then he continues walking, Whose house does he arrive to?

Answer: Felipe's house

Felipe will visit to his newborn brother at the hospital. Write the instructions in order to Felipe can arrive to that place.

Answer: “I walk two blocks west, I walk two blocks south”.

Comment: By tracing out the route to be followed and identifying Felipe's house, the student proves that he uses relative points of reference to be located in the map.

Moreover, by giving instructions using cardinal points west and south, he also shows that he is able to find one's way and trace out routes on the map, giving instruction that includes the cardinal points.

3.2 Level 2. At this level, the students can locate Chile and its neighboring countries in the political map and distinguish big natural zones of the country. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Point out where Chile is in a Map of America, and color the neighboring countries.
Compare general features of human settlements through images and texts (location, size, types of building, productive activities, and routes).

3.3 Level 3. At this level, the student is recognizing outstanding natural and human features of America and Chile. Is able to understand that geographic space is distinguished by establishing connections between natural and human features. The student can extract information from regular and thematic maps and from written and visual sources in order to determine natural and human features of certain geographic spaces. Is able to recognize the importance of reducing negative consequences of human activity on the environment. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Describe the connections between the productive activities of a place and the possibilities provided by the surrounding geographic environment.
Use physical map to describe macro shapes of American relief.
Locate the main concentration of population in a map of Chile.
Suggest solution to confront some negative consequences arising because of human activities in their own region.

Example of Students' worksheet. The Task: Students received two maps of Paihuano, IV Region. One of them showed some human features of this town and the other one showed some elements of the physical Geographic of the place (climate and rivers). It was possible to see clearly the relief of the town in both maps. Afterwards students got a text about the main economic activities. Two photographs of the zone showing mountain chain and grape plantation for Pisco industry. Then, they were asked for mentioning the main physical and human features of the town, establishing connections between the landscape and the main economic activities developed there.

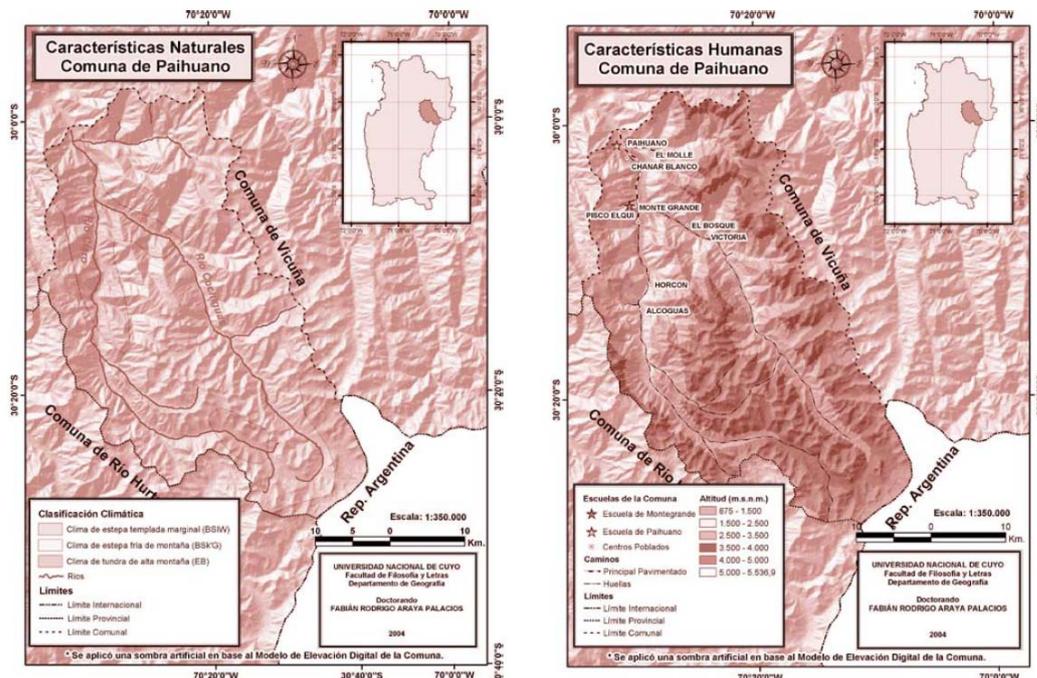


Figure 2. Human and natural maps of Paihuano, IV Region, Chile.

Example of worksheet at the level. According to observed, which are the main natural and human characteristics of the geographic space presented?

Answer: “Human characteristics: School of Monte Grande, School of Paihuano, populated centers and Industries: Tres Eres, Pisco Capel, Pisco Control and Los Nichos. Natural characteristic: bottom of plain valley, winding river of shallow and still waters, mountain of slopes with vegetation, areas of tablelands ...”

Explain the main relationships that may exist between the characteristics of this landscape and the economic activities developed.

Answer: “the relationship that may exist is the fact that the grapes which are produced there, human transforms them into wine. Mountains have this cracks that when it rains, water flows throw it and irrigates naturally the grapes of those vineyards, because of climate and the large amounts of agricultural activity there are plenty of vineyards.”

Comment: Student is able to incorporate information from: maps (school and populated centers), text (referring to industries), pictures (describing to landscape). She/he distinguishes human and natural characteristics and interrelates them linking elements of landscape (as climate and relief) with agricultural activity (the grapes which are produced there, human transforms them into wine).

3.4 Level 4. At this level, the student is distinguishing spatial distribution of natural process in the Earth and recognizes that its existence is related to dynamics of geosystem. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Use maps to describe spatial scope of certain historical processes (for example, areas of influence of classical cultures, and the European expansion).

Example of Students' worksheet. The Task: Students wrote a short text about the eruption of Chaitén volcano, in May of 2008, where it is described the evacuation of the city of Chaitén and made references of the extension of the affected region. Besides, they analyzed a map that showed the superficial distribution of the Earth's tectonic plates. Then, they were asked to link the location of Chile with the existence of this geographical phenomenon and to determine others place where it could occur a similar phenomenon.



Fuente: www.halpedia.com

Figure 3. Map superficial distribution of the Earth's tectonic plates

Example of worksheet at the level. Look at the map and answers: What relationships can you establish between the location of Chile and the existence of volcano eruptions?

Answer: “That Chile is in the limit between the Nazca and South African plates, which exert pressure one plate on top to another, so it provokes a huge energy and telluric movements”.

In which other regions of the planet is it possible a volcanic eruption? Why?

Answer: “In areas such as Japan, on the islands near Australia and in areas of Asia near India, because in these locations exist limitations between the plates where exert pressure and energy one plate on top to another”.

Comment: the student, by applying his/her knowledge of the process of subduction and its link with the volcanism, is able to interpret the information given on the map. Thus, the student distinguishes the convergence areas from the divergence plates and locates areas of possible volcanic activity. So that, the student locates Chile in a

convergence area of tectonic plates, referring the Nazca and South African Plates and mentioning Japan, the islands near Australia and areas near India as areas of subduction.

3.5 Level 5. Students are able to interpret information taken from different sources in order to analyze changes and trends of geographic space's configuration. They can characterize social and environmental problems of big cities and value measures taken for improving the quality of life. How is it possible to recognize this level of learning? Examples of students' performance. When students have achieved this level, they carry out activities like the followings:

Identify on the maps the main cultural regions of the world.

3.6 Level 6. At this level, students can depict the insertion of a country and its region in the World and the historical changes in the shape of the Geographic space in Chile. They should cover the interconnection among the economic process, the composition of the geographic space and the dynamics of the population. Students are able to integrate and incorporate information from various sources and at different scales in order to analyze phenomena and spatial problems, taking into account social, historical and economic variables. They can set out the challenges for sustainability because of globalization and assess the environmental policy and citizens' participation in these subjects. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Locate in a cartographical manner the main business flows at international level of Chile.

Interpret maps about the transport and communication network to identify comparative advantages of some regions and places related to international business flows.

3.7 Level 7. At this level, students are expected to be able to establish connections among several Geographic variables in order to explain the spatial dynamics in certain territory. They should be able to interpret and incorporate information from different sources and scales for analyzing social phenomena and problems, taking into account social, historical and economic variables, as well as formulating hypothesis about its causes and consequences. Students can recognize the relevance of the territorial planning as a rationing instrument of taking up space and evaluates the scope of the environmental policy. How is it possible to recognize this level of learning? When students have achieved this level, they carry out activities like the followings:

Explain how territorial planification can contribute to mitigate the damage of natural disasters on population.

Conclusion

Cartographic materials are one of the best resources Geography teachers have for fostering conceptualization processes in the classroom. Observing, decoding and interpreting the information on maps, offers interesting teaching opportunities that closely reflect the job of progress maps. Graphic schematization as a process of high didactic value, due to its quality of being a language simplifier in the processing of spatial information. Each one of the levels within a range of a competence, is treated in its distinct possible projections starting from an ideal point of initiation in primary and its possible development in secondary school.

In the map, integrated comprehension of several components of geographic spaces, more than the identification of isolated elements, is valued. There is also an assumption that geography comes into existence through observation and interpretation of geographic process in a certain territory, applying this principle to the learning of geography. Besides, the described progression of learning reveals that students recognize they live in a geographic space that is dynamic, interdependent and socially built, in which every person is responsible for the environmental sustainability of the planet and for the care of belongingness places.

References

Batllori, R. 2002. La escala de análisis: un tema central en didáctica de la geografía”. *Iber* 32, 6-18. España. Barcelona.

Centro de Cartografía Táctil. 2009. Escuela de Cartografía, Universidad Tecnológica Metropolitana (UTEM). Revisado 1 de Julio 2009, en <http://www.ctactil.cl/index.php>

Centro de Experimentación e Investigaciones Pedagógicas. (CPEIP). 2009. Revisado 11 de Julio 2009, en <http://www.cpeip.cl/website/index.php>

Centro de educación y tecnología de Chile-Enlaces. 2008. Revisado 13 de Julio 2009, en <http://www.enlaces.cl/index.php?t=44>

Comisión Nacional del Medio Ambiente CONAMA. 2009. Educación Ambiental para la sustentabilidad. Revisado 15 de Julio 2009, en <http://www.conama.cl/educacionambiental/1142/article-28763.html>

Comisión Nacional del Medio Ambiente CONAMA. 2008. Revista Educación Ambiental. Revisado 19 de Julio 2009, en <http://www.conama.cl/educacionambiental/1142/channel.html>

Eflin, James; Ferguson, David. 2001. Environmental Futures: Educating for Sustainability in the 21st Century. *Research Geographic Education*. 3 (1 & 2), 3-31. The Gilbert M. Grosvenor Center for Geographic Education, Southwest Texas State University, San Marcos Texas, EEUU.

Lidstone, J & Williams, M. edits. 2006. Geographical education in a changing world. past experience, current trends and future challenges. The Netherlands: Springer, *the geojournal library*. volumen 85.

Ministry of Education. 2009. Ajuste Curricular y Mapas de Progreso para la Educación Chilena. Revisado 14 de Julio 2009 en www.mineduc.cl

Muñiz, O. 2004. School geography in Chile. In A. Kent, E. Rawling, & A. Robinson (Eds.), *Geographical Education: Expanding Horizons in a Shrinking World*. (pp. 177-180).SAGT Journal, Geocom 33, on the special occasion of the IGU 2004 Congress in Glasgow. London: IGUCGE with the Scottish Association of Geography.

Stoltman, J. 2004. Scholarship and research in geographical and environmental education. In A. Kent, E. Rawling, & A. Robinson (Eds.), *Geographical Education: Expanding Horizons in a Shrinking World*. (pp. 12-25).SAGT Journal, Geocom 33, on the special occasion of the IGU 2004 Congress in Glasgow. London: IGUCGE with the Scottish Association of Geography.

About the Author: Fabián Araya Palacios received his Teacher Qualification in History and Geography and his Bachelor of Education from the University of La Serena, Chile (1990). He obtained his Master of Education in Geography from the University Pedagógica Nacional de Colombia, Colombia (1996) and his doctorate of Geography from the University Nacional de Cuyo, Mendoza, Argentina (2006). His research interests are Geographic Education for Sustainability.