


The focus of transport in Geography textbooks in Latin American countries

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Abstract

The theme of transportation in Geography textbooks is addressed in different ways. Considering the Latin American countries, the difference in the organization of the didactic collections and the distribution of the contents is decisive for the deepening of the descriptions and debates about the transports in each case. Given these assumptions, this article will discuss the approach of transportation in Geography textbooks in Latin American countries (Mexico, Venezuela, Peru, Costa Rica and Brazil), with greater depth in the analysis of Brazilian textbooks, since these differ from the others because they have chapters entirely dedicated to the debates, with broad descriptions about the modes of transport and wide variety of examples in Brazil and other countries. The article has four items, as well as introduction, final considerations and references. The first debate the importance of Geography textbooks. The second makes a theoretical discussion about the Geography of Transport, while the other items address transport in Latin American textbooks to highlight the particularities of the school organization in these countries and their consequences in the textbooks of Geography.

Keywords: Latin America, Transportation Geography, textbooks.

A abordagem dos transportes nos livros didáticos de Geografia em países latino-americanos

Resumo

A temática dos transportes nos livros didáticos de Geografia é abordada de formas distintas. Considerando os países latino-americanos, a diferença na organização das coleções didáticas e na distribuição dos conteúdos é determinante para o aprofundamento das descrições e debates sobre os transportes em cada caso. Diante de tais pressupostos, este artigo debaterá a abordagem dos transportes nos livros didáticos de Geografia em países latino-americanos (México, Venezuela, Peru, Costa Rica e Brasil), com maior

aprofundamento na análise dos livros didáticos brasileiros, já que estes diferem dos demais pois possuem capítulos integralmente dedicados à temática, com amplas caracterizações sobre os modais de transporte e grande variedade de exemplos no Brasil e em outros países. O artigo possui quatro itens, além de introdução, considerações finais e referências. O primeiro debate a importância dos livros didáticos de Geografia. O segundo faz uma discussão teórica acerca da Geografia dos Transportes, ao passo que os demais itens abordam os transportes nos livros didáticos latino-americanos, para evidenciar as particularidades da organização escolar nestes países e seus reflexos nos livros didáticos de Geografia.

Palavras-chave: América Latina, Geografia dos transportes, livros didáticos.

El enfoque del transporte en los libros de texto de geografía en países latinoamericanos

Resumen

La temática de los transportes en los libros didácticos de Geografía es abordada de formas distintas por el planeta. Considerando los países latinoamericanos, la diferencia en la organización de las colecciones didácticas y en la distribución de los contenidos es determinante para la profundización de las descripciones y debates sobre los transportes en cada caso. Frente a tales presupuestos, este artículo debatirá el abordaje de los transportes en los libros didácticos de Geografía en países latinoamericanos (México, Venezuela, Perú, Costa Rica y Brasil), con mayor profundización en el análisis de los libros didácticos brasileños, ya que éstos difieren de los demás pues poseen capítulos integralmente dedicados a los debates, con amplias descripciones sobre los modos de transporte y gran variedad de ejemplos en Brasil y en otros países. El artículo tiene cuatro elementos, además de introducción, consideraciones finales y referencias. El primer debate sobre la importancia de los libros didácticos de Geografía. El segundo hace una discusión teórica acerca de la Geografía de los Transportes, mientras que los demás ítems abordan los transportes en los libros didácticos latinoamericanos, para evidenciar las particularidades de la organización escolar en estos países y sus reflejos en los libros didácticos de Geografía.

Palabras clave: América Latina, Geografía de los transportes, libros de texto.

Introduction

Transportation has been present in human history since the structuring of the first civilizations in antiquity. The movement of people and goods date back to the territorial configuration of the first human groups on planet Earth, which circulated through several areas of the globe over millennia. The evolution of mankind is accompanied by advances in transportation in structural and organizational aspects, since these provide and allow the connection between various different places.

The studies of transportation in geographical science date back to the classics of the discipline's epistemology. Authors such as Friedrich Ratzel, Paul Vidal de La Blache, Camille Vallaux and Jean Brunhes paid attention to the importance of studies on land surface transportation and its implications on the organization of geographical space (COSTA, 1992; SILVEIRA, 2011; SILVA JUNIOR, 2012). In the history of Brazilian geographic thought, the works of Travassos (1942) and Silva (1949) in the first half of the 20th century are notable. They describe in an extensive way the spatial organization of the material circulation throughout the country focusing on the its natural aspects and the demands for configuration of new infrastructures.

The scholarly production on Transportation Geography may be linked to Economic Geography, Political Geography and also Urban Geography. This implies that transportation is endowed with elements that are associated with these areas of geographical thought, allowing them to be correlated. That is, a study of Transportation Geography can transit between theoretical aspects of Political Geography, Urban Geography and Economic Geography simultaneously and articulate them in order to reveal important socio-spatial issues.

On the Geography textbooks used in school teaching, the contents on Transportation Geography are arranged in different ways throughout the learning stages. In addition to the internal differences relative to each didactic collection used in the same country, there is a wide variety of approaches to transportation between different countries. In countries such as Mexico, Venezuela, Peru and Costa Rica, transportation is discussed alongside themes associated with economic activities such as trade and services. On the other hand, Brazilian textbooks have chapters exclusively dedicated to transportation that address the organization of each movement system (CONTEL, 2012 [2001]) or transportation modes - air, road, rail, waterway etc.

In light of these prerogatives, this paper analyzed the approach of transportation in Geography textbooks in Latin American countries. Textbooks from Mexico, Venezuela, Peru, Costa Rica and Brazil were considered. Due to the greater extent of content in the Brazilian collections, there is an exclusive item for the debate about Brazilian materials, while another topic combines all the other countries mentioned.

Regarding the methodological procedures used in the research, it should be noted that the didactic collections were analyzed from the cataloging of chapters and excerpts that deal with transport. Screenshots were taken of the pages of the digital versions of the books containing texts, maps, graphs, tables, etc. It is emphasized that the Brazilian collections largely have entire chapters on the subject, which resulted in the cataloging to consider whole pages. On the other hand, the Mexican, Venezuelan, Peruvian and Costa Rican collections do not

have complete chapters on transport, resulting in the searches for the theme being carried out on other contents throughout the books.

This article is organized into four topics, in addition to the introduction, final considerations and references. The first topic will discuss aspects that concern to the importance of textbooks as a diffuser of geographical knowledge. The second item addresses historical and theoretical issues about the geography of transport as a branch of geographic knowledge. The third topic discusses the transportation Geography in Brazilian textbooks. Finally, the fourth item discusses the transportation Geography in the textbooks of other Latin American countries and is subdivided into Mexico, Venezuela, Peru and Costa Rica.

The importance of Geography textbooks

Geographic education has a fundamental social function for the reading and interpretation of socio-spatial dynamics and disputes associated with the uses of the territory by enabling the understanding of reality, the relationships between natural elements and the production of space by society and also the places in which one lives,. It is “a knowledge that structures the reading of the world, in the understanding of spatial formation and development of spatial thought that promotes the formation of critical citizens” (CASTELLAR and JULIASZ, 2018, p. 161).

So that geographic education can be assured to citizens, there is a wide variety of teaching tools that allow the presentation and debate of the contents of this important field of scientific thought. From simpler materials for observations and annotations to computer programs with intense embedded technology, the teaching of geography is intertwined with the use of materials that will have as its main purpose, at its limit, the development of citizenship both in the teaching and learning processes.

In a widely unequal world, in which the digitalization of the territory and the diffusion of technical networks is not equitable, the textbook plays an important role in the dissemination of knowledge and for geographical education. According to Azambuja (2014, p. 12), “the textbook is part of the school culture and, when used as a study manual, includes the content-form of school disciplines worked in Basic Education”.

The teaching practices of Geography can be periodized by textbooks, because these reflect the permanence and changes of what is studied in basic school. The textbook is configured as one of the places of school knowledge from the prerogative that the knowledge contained therein are considered necessary for the formation of individuals and society (AZAMBUJA, 2014; SILVA, 2006).

The textbook is “part of the teacher’s professional identity, and a crossing in the student’s life” (SILVA, 2006, p. 34). It is not an object exempt from the debate that reconfigures it and relegates it to an irrelevant role in the development of citizenship. That is, it is directly responsible for the production of education.

The particular conceptions about the textbook are, primarily, manifestations or discursive events backed by a historical-ideological complex, resulting from it, consequently, that is, the conceptions of textbook pervaded in discourses are built historically, as a socially

determined discursive unit. Thus, in addition to the dimensions of didatization and use, the study of the textbook also involves the historical-ideological conditions of its production and meaning and, above all, the conceptions that underlie it (EVANGELISTA, 2014, p. 12).

Although it is an auxiliary tool for teaching practice and learning, the textbook plays a central role in demonstrating forms, describing processes and transformations and debating contradictions. It is a complex cultural object, because it is simultaneously an intermediary element of teaching and learning and a product endowed with knowledge for the training of the student who, to a large extent, is conceived and marketed by publishers (SILVA, 2006; EVANGELISTA, 2014).

Therefore, to reiterate the importance of the textbook beyond an elementary support material is to ensure the dissemination of knowledge through school education. On the other hand, this cause does not negate the need for a broad and continuous debate about the content brought by the material, since it is an instrument that assumes an important centrality in the teaching and learning process. It would not be convenient for books to prevail narratives and discourses that spread ideas based exclusively on common sense. It is important and salutary that textbooks enable the construction of a well-founded, civic and plural thinking.

Geography of transport as a branch of geographical knowledge

Transportation is designated as a field of study of Geography in an article published in 1897 by Alfred Hettner (MORAES, 1990; ARROYO, 2015; SILVEIRA, 2011). The thought of Friedrich Ratzel is central to the understanding of circulation in the early days of Geography. In 1914, when studying regional circulation and transport, the author organizes the pioneering bases of the “General Geography of Circulation”, pointing since then to the importance assumed by transport as a mechanism of control and connection between parts of a nation. Ratzel considers that circulation is essential to define centralities, because the development of regions occurs unevenly (COSTA, 1992; SILVEIRA, 2011; SILVA JUNIOR, 2012).

Ratzel, through the idea of “ecumene circulation”, expresses the recognition of the existence of various modes of circulation that form different networks, from the peripheral, devoid of technological progress, to the most complex networks, advanced circulation systems (SILVA JUNIOR, 2012, p. 393).

The studies on transportation were carried out by other European geographers, which shows the relevance that the theme acquired within the growth and diffusion of geographical thought. In France, Paul Vidal de La Blache made a historical geography that debated the various notions of mobility of people since the first civilizations (SILVA JUNIOR, 2012). The also French Camille Vallaux in his work “The soil and the State” (“Le sol et l’État”) dedicated a chapter entitled “The circulation” and stressed the political character of the circulation. According to the author “Political circulation coalesce on earth with almost all general phenomena of economic circulation” (VALLAUX, 1914, p. 272, our translation).

Jean Brunhes co-authored with Vallaux in 1925 the book “Human Geography” (“La Géographie Humaine”) with a chapter entirely aimed for the discussion on circulation. Brunhes proposes a systematization of the “General Geography of Circulation”, being a central branch of Economic Geography, which would consider elements such as tariffs, trade treaties, among others (SILVEIRA, 2011; SILVA JUNIOR, 2012).

Rodrigue et al. (2006) points out that transportation forms a multidimensional set with historical, social, political, environmental and economic importance. Transportation played various roles in the historical development of civilizations over time, facilitated and currently provide movement for several people that access health, educational and cultural services, beyond being important political tools for the constitution of a national unity. Finally, transportation is central to the environmental issues of the present period.

The evolution of transport is continuously linked to economic development, as the provision of infrastructure reflects transformations in industrial production and circulation services. “Transportation has transformed the economy of entire regions” (SANTOS, 2012b [1980], p. 110), which shows the importance of studies that analyze the fixed and flows associated with the movement of people, goods, information and money in the geographical area.

It is important to think beyond the perspective that considers transport exclusively as a large set of economic activities formed by movement of people, goods, information and money. That is, transportation are also services (public or private) endowed with social function that allow the realization of important spatial interactions that vary in intensity, shape and direction throughout the planet. It is ultimately about understanding transportation in a broader perspective that also considers the needs of populations and the socio-spatial transformations engendered in the bulge of the capitalist mode of production.

The geography of transport in Brazilian textbooks

The textbook in Brazil has important meaning for Brazilian education, for it is object of robust public policies for the dissemination of knowledge and for the improvement of teaching and learning. In 1929, it was created by the Ministry of Education of the Brazilian Federal Government, through the National Fund for Development of Education (FNDE), the National Program of Books and Didactic Material (“Programa Nacional do Livro e do Material Didático” - PNLD), which is constituted by of a set of actions aimed at the distribution of didactic, literary, pedagogical and other works, as well as a wide variety of other support materials for students and teachers of public schools of basic education in Brazil. The Program also serves philanthropic, community and confessional non-profit institutions that are affiliated with the Public Power (BRAZIL, 2023, s/p).

The receipt of materials is free, regular and continuous and is present throughout the national territory. Since 2011, there has been a partnership between FNDE and Correios do Brasil (Brazilian National Post Service) for the distribution of tens of tons of materials in all Brazilian municipalities (VENCESLAU, 2017). It is an important tool to support the teaching-learning process for the schools benefited. The participation in the PNLD is made from the forwarding of the Term of Adhesion by the managers of the municipal, state, district and federal

schools, through the commitment to the execution of the actions of the program according to the legislation (BRAZIL, 2023, s/p).

Considering the Geography textbooks in Brazil and their transformations through the course of the last century, it is noted that even the current collections “still retain some characteristics of Classical Geography, while seeking to renew methods and concepts and/or present a reorganization or reordering of themes” (AZAMBUJA, 2014, p. 25). It is worth mentioning that the school geography and the teaching of Geography of Brazil, that is, the contents related to the Brazilian territory, follow the formation of the Brazilian geographical thought since the beginning of the twentieth century (AZAMBUJA, 2012).

An important part of the current school organization in Brazil is linked to the drafting of the Federal Laws number 5,692 of 1971 and the Guidelines and Bases of Education Law number 9,394 of 1996. The first was responsible for engendering changes in didactic materials with the addition of techniques for directed studies and exercise notebooks, in addition to the insertion of theoretical and methodological changes already linked to the debate promoted by Critical Geography, that culminated to some extent with a renewal in school teaching. The second law organizes school education in Elementary School I and II, with five and four years, respectively, and High School, with three years (AZAMBUJA, 2014).

Starting from the law 9,394, it is written and published the National Curriculum Parameters (PCNs) for Basic Education. “Textbooks began to be prepared and evaluated, considering these new curricular bases and the criteria established by the National Program of the Textbook - PNLD established by the Ministry of Education” (AZAMBUJA, 2014, p. 13).

Geography classes in Brazil take place in the four years of elementary school II and in the three years of high school. The themes addressed in elementary school II are repeated in high school, but with different level of development and greater variety of elements for reflection, because the geographical contents are required in the entrance examinations of public universities, as the National High School Examination (“Exame Nacional do Ensino Médio” – ENEM), which allows high school students access to higher education in federal and state universities.

In the early years of elementary school II the contents related to the Geography of Brazil that emphasize physical, human and political aspects of the country are debated. In the first year of this cycle are discussed the themes related to Cartography, Geomorphology, Climatology, Vegetation and Natural Resources, with emphasis on examples of the Brazilian territory. In the following year, the themes associated with Demography, Agriculture, Urban Geography, Economic Geography, Industry, Transport and Brazilian Regions are discussed.

From the third year of this cycle, information about the other countries is presented. It is emphasized that several contents dialogue with the themes addressed by the discipline of History, as issues associated with Geopolitics and International Economic Geography are discussed. The choice to present a certain set of countries varies according to the preparation of the didactic material, that is, while some textbooks address the Asian continent in the eighth year, others discuss it the following year. This characteristic is due to the organization of the national curriculum of Geography, which allows to some extent a flexibility in the distribution of content relative to other countries of the globe.

The theme of transport is discussed in the textbooks of geography both throughout elementary school II and high school. At both levels, the books bring complete chapters that address all modes of transportation - air, road, rail, waterway and pipeline - and discuss communication and data transmission infrastructures such as submarine cables, antennas, computers, etc. and emphasize the movement of people, goods and information.

Some discussions on the modernization of technical networks and the results of technological advances in the organization of the Brazilian territory are reinforced. These contents are treated with a historical approach that shows the evolution of circulation networks in the country and distribution in the current period, to later problematize regional issues involving the distribution of goods and the movement of passengers.

The websites of public institutions in Brazil, such as the Brazilian Institute of Geography and Statistics (“Instituto Brasileiro de Geografia e Estatística” - IBGE) and the National Department of Transport Infrastructure (“Departamento Nacional de Infraestrutura de Transportes” - DNIT) produce a large and important set of data and information that are used in the preparation of teaching materials. The availability of data and the organization in online portals allows you to consult, download and prepare cartographic and statistical products.

In high school, the transport debate can be held in any of the three years. Unlike the second level of elementary school, the discussions are more in-depth and also bring examples from other continents, that is, they are not chapters dedicated exclusively to transportation in Brazil. Examples of countries of the European Union, the United States and China are usually brought up to show, above all, the particularities of each country and also to make a set of comparisons with Brazil. Textbooks, when addressing the Brazilian case, bring the discussion about the imbalance of the transport matrix in this country, which has a relevant predominance of the road movement system.

The chapters dedicated to the transportation geography generally discuss the territorial configuration of the movement of people and goods from a historical approach, which elucidates the formation of the Brazilian territory and the consolidation of geographical networks. The main issue debated by textbooks is the option for the road traffic system to the detriment of other systems, emphasizing the abandonment of the railways occurred from the 1950s and the strong growth of the road network throughout the territory, national integration instrument.

The reflections on transportation in Brazil seek to show the relationship between the development of infrastructure and the export-oriented economy, linked mainly to the trade of agricultural and mineral products. The maps used in textbooks illustrate the organization of transport networks and assist students in comprehension the geographical and historical formation of Brazil. Another important topic about transportation in Brazil is what debates the internal circulation on rivers. The Brazilian network of navigable rivers is quite extensive and of intense use in states of the Amazon region, as Pará and Amazonas, both for the transport of loads and for people, because the road network of the Amazon is more rarefied in relation to the rest of the country.

In the second level of elementary school, the theme of transportation is debated predominantly in the seventh year, in which there is a development of the economic aspects of

Brazilian geography. Usually, the books bring a complete and exclusive chapter that describes the organization of transportation modes in Brazil, with several empirical examples throughout the country and wide use of photographs, maps, tables and graphs. Unlike high school, this is a discussion more aligned to the National Curriculum of Geography.

For this topic of the article was chosen the didactic collection entitled “Por dentro da Geografia”, organized by Wagner Costa Ribeiro. It is a set of four books - one for each year of elementary school II - that have transportation contents in the books for the sixth and seventh years.

The sixth year book contains seven pages on transportation within chapter 12 entitled “Trade and world circulation” (RIBEIRO, 2016). This chapter has as main premise to present to students general aspects of production and material and immaterial circulation, with items that address passenger transport, goods and information. At the end of this chapter, there is a page with a section called “Enquanto isso no Brasil...” (“Meanwhile in Brazil...”) to deal with infoways in the Brazilian territory from the use of a map with internet users by state. There is also a section called “Você em ação” (“You in action”) with eight written exercises on the chapter in question, which includes, within 23 pages, seven pages with contents associated with transport. These are grouped into three topics:

- Topic 2 – “O transporte marítimo” (“Maritime transport”): with a little over three pages, this item brings the importance of maritime transport for world trade and describes the use of containers in this modal and its consequences for maritime circulation around the planet. There is also a set of paragraphs on the Panama and Suez Sea passages, with a diagram on page 209 illustrating the operation of the Panamanian canal;
- Topic 3 – “Os tráfegos aéreo, rodoviário e ferroviário” (“Air, road and rail traffic”): this makes a brief discussion about air, road and rail modes, with a few paragraphs, a map about air flows around the world on page 210, a photograph with the Australian “road Trains” (trucks with four trailers) and another image with a high-speed train (TGV) from Paris;
- Topic 4 – “Sistemas de transporte” (“Transport systems”): this topic has longer paragraphs and two maps with the land transport networks in Japan and the African continent. The main objective of this item is to demonstrate to students lucidly the integration and absence of certain modals in certain parts of the geographical space.

It is worth mentioning that the chapter, although not exclusively dedicated to transportation, brings a rich textual and graphic material, with wide use of photographs, maps and schematics. We note the concern with more general notes and dedicated to examples of various parts of the planet. This information to some extent encourages students to know in more detail the reality of other countries.

The book of the seventh year contains a chapter entirely dedicated to transport, with emphasis on the Brazilian territory. Entitled “A circulação e os transportes” (“Circulation and transport”), chapter 12 contains 17 pages that describe and discuss the systems of movement in

Brazil, with emphasis on the territorial configuration of transport and its problems. At the end of this chapter, there is a page with a section called “Enquanto isso no mundo...” (“Meanwhile in the world...”) to deal with the Chinese transportation system from the use of a map with the highways and railways in the Chinese territory.

There is also a section called “Você em ação” (“You in action”) with thirteen written exercises on the chapter in question, in addition to the suggestion for a group work that consists of the preparation of travel itineraries through Brazil that use the highways of the country (RIBEIRO, 2016). The contents of this chapter on transport are organized into five topics:

- Topic 1 – “O país das rodovias” (“The Country of Highways”): this item discusses in four pages the wide use of road transport in Brazil for both the circulation of goods and people, whether on longer routes or in cities. Two graphs are used to highlight the imbalance of the Brazilian transport matrix and to reinforce the argument of the high dependence of the road modal throughout the national territory. The texts bring various data and information about the Brazilian road network and, finally, there is a map on page 203 with the highways around the country. On page 204 there is a table discussing the mortality of motorcyclists in urban centers;
- Topic 2 – “A ferrovia: do abandono à privatização” (“The railway: from abandonment to privatization”): this item discusses in two pages the formation of the Brazilian railway network and shows the low level of integration between the various branches throughout the territory. The main objective of this topic is to pay attention to the abandonment of railways in Brazil to the detriment of highways. There is a map on page 205 with the Brazilian rail system in 2014. Already on page 206, there is a group of paragraphs between two images discussing the privatization of railways in the country since the 1990s;
- Topic 3 – “Hidrovias e portos” (“Waterways and ports”): gathered in four pages, this item is internally subdivided into “waterways” and “ports”, to discuss internal waterway navigation and later Brazilian participation in world maritime navigation. The vast national hydrographic extension allows the use of a wide set of rivers for the transport of cargo and passengers - this very recurring in the Amazon. The text highlights the Tietê-Paraná and São Francisco waterways, formed by important rivers that integrate Brazil and also include neighboring countries. On page 209 there is a map showing the navigability of the basins in the country, while on the other pages there are photos and a map showing the Brazilian ports on page 210;
- Topic 4 – “Transporte aéreo em expansão” (“Air transport in expansion”): the two pages dedicated to this item address the intensification of air transport, especially of passengers, through the Brazilian territory from the second half of the decade of 2000, resulting from the real increase of the minimum wage, credit expansion and substantive improvements in the quality of life of the Brazilian people. The texts contain important data on Brazilian airports and the chart on page 212 shows the robust growth in the number of passengers on domestic flights in the country;

- Topic 5 – “Energia para o transporte” (“Energy for transport”): the three pages of this item bring elements to elucidate the importance of energy sources for transport throughout the country. The paragraphs contain relevant information about the most used fuels in Brazil and debate separately in three sub-items – oil and natural gas, ethanol and biodiesel.

It is a longer chapter, with a greater level of depth and richness of details. The fact that a regular seventh-year student previously had in the preceding months and year contents related to nature, the environment, the population, the countryside and the cities, contributes to a better understanding of circulation. In addition, the introduction of more elementary and general topics on transport in the sixth year makes it possible for the teacher to resume with the students part of the previous discussions, which helps in understanding the various problems brought by the chapter on transport in the seventh year.

This wide variety of contents and the development of these throughout the four years of elementary school II in Brazil stems from the organization of the curriculum of Geography in the country. While in the other countries analyzed the geography classes occur only in one of the years of the period equivalent to elementary school II in Brazil, in Brazil classes are weekly and occur throughout the cycle, that is, students access a wide set of information, data and reflections over the four years of elementary school II and continue with this approach throughout high school.

The greater number of classes in Brazil demands a greater quantitative development and allows a more improved qualitative approach, which provides teachers and students with a broader and analytical knowledge about Brazil and the world. It is worth mentioning that the wide variety of didactic collections and the rigorous criteria for evaluation and choice of books by the Brazilian State - via PNLD - makes publishers have a very careful curation about the selected information and the internal organization of the contents.

The publishers compete with each other to be the winners of the bids for the acquisition of books by the Federal Government. These are bulky purchases, because the number of students to receive such didactic collections is largely higher than one million students, which makes these contracts attractive to publishers. The robustness of the PNLD makes the didactic collections are rigorously thought and designed by publishers. Considering the Geography books in Brazil, the central role of the National Curriculum Parameters (PCNs) and the National Common Curriculum Base (BNCC) which have guidelines for the definition of the content covered in each cycle and year of elementary school I and II and for each high school series.

Geography of transport in the books of Latin American countries

Mexico

Geography in Mexico follows a thematic approach. The book begins with geographic skills in general and cartographic skills in particular. Subsequent chapters explore various facets

of the links between nature and society. Finally, the closing chapter delves the ties between geographical space and citizenship.

Instead of dedicating a chapter to transport and mobility, the seventh-year Mexican textbook presents road transport as linear content within the chapter on trade, communication networks and transport. Nonetheless, discontinuous text elements across the book mention road transport while using the theme for acquiring geographical skills.

The content of transport is part of the interconnection of means, modes and infrastructure as components of each transport network. However, infrastructure is the backbone of the content of transport in general and road transport in particular. Information on means of transport by road is limited. The content mainly revolves around key geographical concepts such as scale, globalization, development and sustainability.

Scale-based perspectives on road transportation are primarily concentrated in Mexico as a national space and in the world representing the global scale. Thus, both the continuous text and its supporting visual elements, such as maps and graphics, offer a detailed representation of road transport in Mexico. On the other hand, the information associated with the global scale remains of a more aggregate nature.

The topic on transport mainly supports students in understanding the spatiality of economic globalization by explaining the patterns of global trade. Development constitutes a concept of support whenever the book addresses economic centers and peripheries through its infrastructure. The contents on sustainable development and environmental protection briefly address transport in its entirety as a component of a more sustainable future. Road transport serves as a pictographic representation of environmental pollution.

In general, the book refrains from presenting the dynamic side of transport, keeping the focus on descriptions of networks and spatial structures on a national and global scale. In addition, aspects related to individual mobility and their spatial patterns remain unresolved. Case studies are also missing from the textbook. The authors of the textbooks opted for a rich visualization composed of maps, images and tables that complement the continuous text.

Regarding the educational objectives, the analysis of the tasks presented in the contents dedicated to road transport shows two main aspects. On one hand, tasks strongly encourage the reading and interpretation of maps. On the other hand, the identification of spatial patterns and their possible explanations dominate the tasks. Development in time and overall dynamics are outside the objectives to which tasks contribute.

Venezuela

Geography in Venezuelan lower secondary education rests on the thematic and regional approach. Students first learn about General Geography before Venezuela's Geography contextualizes thematic content within a regional approach.

Turning to General Geography, the textbook first enters Geography as an academic discipline and its fields of investigation. The following two chapters explore the natural and socioeconomic characteristics of geographic spaces. The fourth chapter deepens the current

world, following a regional approach on a continental scale. Finally, the closing chapter turns to environmental challenges.

Along with other services, the textbook introduces transportation within the economic activities of the tertiary sector. The continuing text explains that transport as a service requires means, modes and infrastructure. Along the modal-based typology, students learn that road transport is useful to bridge short distances and mainly suitable for limited volumes of cargo. There is very limited information on people's mobility. However, by contrast, the textbook suggests that high-speed rail systems, such as those introduced and progressively expanded in developed countries, represent a better alternative for both people and cargo than road transport.

A second and final mention of transport falls to the disparities associated with technological progress in each country. The textbook mentions that an expansion of the road network can lead to the reduction of regional inequalities. The least developed countries with a precarious road network are more exposed to a low territorial fluidity than the developed countries with more structured infrastructure.

In terms of geographical concepts, transport-related content only contributes to development. Given its integration into a service-centered chapter, the emphasis remains on economic development. Despite displaying a rich disposition of discontinuous text, while studying General Geography, students have to rely only on continuous text, as the authors have decided not to include any kind of visual elements. The book contains a set of tasks at the end of the chapter. Overall, the tasks focus on different types of economic activities, but leave road transport overlooked.

The second textbook analyzed follows a regional approach based on the Geography of Venezuela as a case study. After a chapter focusing on Venezuela's geographical position, three separate chapters focus on Physical Geography, Population Geography, and Economic Geography. The last two chapters deal with political-administrative regionalization and environmental issues.

Nominally, the textbook addresses transport within the content dedicated to services. However, information on road transport is scarce and dispersed in the different chapters. Within urban spaces, the book mentions that improving infrastructure has a negative effect on social cohesion due to the dynamics induced in the real estate market.

As part of the study of the Venezuelan economy, students learn that exporting fossil fuels has enabled investment in infrastructure in general and roads in particular. When describing tourism, the continuous text informs students that a well-developed road network is one of the crucial factors. However, more roads often lead to more frequent congestion.

Similar to the textbook previously presented on General Geography, Venezuela's Geography also uses road transport to address economic development. In contrast to General Geography, the textbook dedicated to Venezuela refrains from comparing the country's road transport with that of other countries.

Overall, the modest content on road transport remains limited to the continuous text. Nonetheless, some tasks contain discontinuous text elements, such as maps. A total of two tasks uses road transport as content: "Choose one of the roads represented on the map. Describe which cities it crosses and explain the role of the road for the development of these cities!";

“How is [the settlement] connected to other settlements (streets, avenues, roads or rivers)?”. Both tasks support geographic skills linked to the description of spatial patterns and serve to better understand economic development and its factors.

Peru

Geography in Peruvian secondary education is part of the interdisciplinary theme “History, Geography and Economy”. The school subject follows a more thematic approach covering the ties between religion and society in the Middle Ages, valuing the reflective and innovative spirit of the Renaissance, reflects upon the grand achievements of American civilizations, explains how the conquest of American territories changed global history, describes the new world order imposed by the Spaniards in Peru, reflects on the goals to achieve environmental quality and constructs a country offering opportunities for all, and finally values the prospects of the Peruvian economy when assessing future options.

Content on transport bridges Geography and Economy as the textbook explores communication and transport networks in the context of economic development. The textbook repeatedly emphasizes the importance of the Peruvian road network for the country’s economic development. The brief continuous text clarifies the role of the Ministry of Transport and Communication in the planning, construction and maintenance of the road network. Subsequently, the 2009 data visualize the length of the total and paved road system, including the country’s only freeway in the country (*Panamericana*). A map of Peru’s transport network, including roads, complements the continuing text. Based on the text, the textbook contributes primarily to economic development as a key geographical concept. Nonetheless, the tasks define a very different focus.

All three tasks presented on the part dedicated to Peruvian transport include road transport. The first task focuses on map reading skills and on describing basic spatial structures and connections, while the second task requires students to explain the importance of communication and transportation for the development of Peru.

Finally, the third assignment asks students to choose a Peruvian region using a homepage. Subsequently, students should describe their way there and also how they could visit points of interest around their chosen destination. Thus, the tasks mainly focus on cartographic skills and spatiality of road networks. With regard to the organization of the item, the discussion that addresses road transport focuses mainly on the continuous text with a complementary map that supports the tasks.

Costa Rica

Costa Rica’s high school curriculum integrates Geography into the interdisciplinary subject of Social Studies. Consequently, the content follows a stronger topic-based approach that enables exploration of content from various disciplinary perspectives.

The eighth-grade textbooks explore the grand topic of human adaptation to a changing environment, particularly concerning to risk management, hydrological resources and climate

change. The three main units cover how humans adapt to a dynamic geographical space and limited hydrological resources, the contribution of humans to climate change and local and global solutions to leverage and adapt to the challenges of climate change. Overall, the textbook operates content on a global scale. However, the closing thematic unit connects Costa Rica to the world, thus operating with the concept of geographical scale.

The content on road transport falls within the third thematic unit and explains one of the possible ways to adapt to climate change in Costa Rica and worldwide. The short and continuous text explains the role of different modals such as road and railway. A combination of modes and means illustrates how a shift from individual transport to public transport and from road to rail could make a significant contribution. The proposed measures remain generic, such as restricted access of cars to the interior of cities (partially and periodically based on license plates), improved bus networks that extend to the suburbs and construction of bike lanes.

A picture of a bike lane exemplifies a way to mitigate climate change. Although the content is very limited, the continuous and discontinuous text complements each other. Similar to the modest content, only one task addresses road transport, urging students to name ways to mitigate climate change based on changes in the transport area of their home settlements.

The ninth-grade textbook takes a historical glance and explores humanity's history since the Middle Ages and leading to 19th century Costa Rica. The first thematic unit explores the economic, social, political and cultural processes that shaped the development of humanity between the Middle Ages and the Renaissance. The subsequent thematic bloc focuses on modern societies, touching upon absolutism, the Enlightenment, the French Revolution, and Latin American colonial societies (including the early 19th century). Finally, the third thematic unit analyzes American independence, the Industrial Revolution and the history of the Costa Rican nation-state, including the social repercussions of its integration into the world economy of the nineteenth century.

The textbook addresses road transportation within the third topic while addressing Costa Rica's integration into the global economy. Coffee serves as an example to highlight how exports have required changes in agriculture and infrastructure, leading, among others, to the expansion of ports in the Caribbean and the construction of roads and railways. Regarding coffee exports, initial road development projects faced greater challenges, such as railroad initiatives. Grain, on the other hand, required traditional means of transport heavily dependent on human and animal strength. In general, road transport and the road network development play only a secondary role compared to railways and shipping.

The text mainly contributes to the key geographical concept of development. Given its broader historical framework, the economic layer plays a more central role. However, a broader cultural and social dimension was also mentioned in the textbook. The only task of addressing transportation directly requires students to reproduce the factors that induced the infrastructure development project in light of Costa Rica's coffee production and export.

Closing remarks

Studies on transportation in geography are important due to the transversality of the theme within geographical science. By studying the movement of people, goods, information and money, Geography brings a wide range of possibilities of descriptions, analyses, correlations and interpretations about the geographical space and uses of the territory, as transport enables the understanding of the interrelationships between the city and the countryside, between agriculture, industry and trade, between different regions in a same country and elucidate the importance of economics and geopolitics for understanding the organization of space.

Textbooks are carriers of ideas and important tools for the transmission of scientific knowledge and for the teaching exercise, which makes essential the debate around its construction and the approach about the contents contained in this material. Books are important tools for learning to be done in a well-founded and plural way for students, as they provide the contact of children and young people with the knowledge that will help in the formation of citizens and citizens for the future.

When dealing with discussions about the transformations in the geographical space promoted by society, the textbooks of Geography address natural, economic, social, political and cultural aspects of various countries, which requires rigor and demands care with the choice and organization of the theoretical-methodological framework that will guide the writing of books and also of graphic objects - maps, tables, graphs, diagrams, etc. - that will integrate the chapters of the didactic collections.

Considering the debate on transport in Geography textbooks, it is important that aspects related to infrastructure, industry and transport services be inserted to support important discussions on topics such as intermodality, transport matrix, regional development and accessibility. For example, a set of texts and graphic objects that discuss the movement of people in a particular municipality or region may arouse the interest of students and educators to propose new policies associated with public transport in that locality, that is, the discussion brought by the textbook can be the starting point for a set of classes and activities that will result in the expansion of a debate beyond the classroom.

The approach of transport in Geography textbooks brings several possibilities for the expansion of the reflexive, interpretive and analytical capacity of students and teachers about everyday reality. Therefore, it is of central importance that these materials have a clear internal organization, an adequate use of language and a good articulation between theoretical and empirical aspects, which may provide an improvement in the teaching-learning process.

It is mentioned the importance of the presence of Geography classes throughout all years of elementary school II in Brazil and also the minimum amount of two weekly classes (in some schools this number can be higher - 3 or 4 lessons per week), also in Brazil. Which allows for the teacher a workload to deal with a reasonable amount of content and reflections, with the proposition of a diverse set of activities.

That is, the fact that the teaching of Geography is present in all years of elementary school II is central to the greater robustness and development of the contents brought by the Brazilian didactic collections, that may touch upon case studies of both the Brazilian territory

and other parts of the world. The theme of transport, such as other major themes, elucidates such possibilities, since after presenting the theoretical framework that supports the analysis and reflections on such themes, Brazilian textbooks enrich the debate through collections of data, information, graphics, photographs, maps and other materials.

When comparing the selected didactic collections, it is noted that the reduced number of classes in some Latin American countries makes the contents have a lesser depth and detail, with emphasis on the presentation of some information and the processing of a limited set of data, which reduces the presence of some contents such as those related to transport. Unlike the Brazilian didactic collections, the books of the countries mentioned do not have exclusive chapters on transportation in Geography. Therefore, this theme is punctually inserted in other discussions previously selected for the composition of the works, which to some extent reduces the possibilities of obtaining information and analysis and reflection on circulation both in the countries themselves and in other regions of the world.

References

- ARROYO, M. Redes e circulação no uso e controle do território. In: ARROYO, M. e CRUZ, R. C. A. **Território e Circulação: a dinâmica contraditória da globalização**. São Paulo: FAPESP/PPGH/CAPES/Annablume Geografia, 2015, p. 37-49.
- AZAMBUJA, L. D. O livro didático e o ensino de geografia do Brasil. **Revista Brasileira de Educação em Geografia**, v. 4, n. 8, p. 11-33, 2014.
- BRASIL. Ministério da Educação. **Fundo Nacional de Desenvolvimento da Educação**. Sobre os programas do livro. Disponível em: < <https://bit.ly/3DP4pPU> >. Acesso em 07 fev. 2023.
- CASTELLAR, S. M. V.; JULIASZ, P. C. S. Educação geográfica e pensamento espacial: conceitos e representações. **Acta Geográfica**, Edição especial, p. 160-178, 2018.
- CONTEL, F. B. (2012). Os sistemas de movimento do território brasileiro. In SANTOS, M. e SILVEIRA, M. L (2001). **O Brasil: território e sociedade no início do século XXI**. 3.ed. Rio de Janeiro: Record, 2012.
- COSTA, W. M. **Geografia política e geopolítica: discursos sobre o território e o poder**. São Paulo: Hucitec, 1992.
- EVANGELISTA, M. C. C. **Concepções sobre os livros didáticos de geografia: narrativas autobiográficas de professores do ensino fundamental**. 2014. 199f. Dissertação (Mestrado em Educação) - Centro de Educação, Universidade Federal do Rio Grande do Norte, Natal, 2014.
- MORAES, A. C. R. **Ratzel**. São Paulo: Ática, 1990.
- RIBEIRO, W. C. **Por dentro da Geografia**. 4.ed. São Paulo: Saraiva, 2016.
- RODRIGUE, J. P.; COMTOIS, C.; SLACK, B. **The geography of transport systems**. London and New York: Routledge, 2006.

- SANTOS, M. (1980). **A urbanização desigual**: a especificidade do fenômeno urbano em países subdesenvolvidos. 3.ed. São Paulo: Edusp, 2012b.
- SILVA, J. M. **A constituição de sentidos políticos em livros didáticos de geografia na ótica da análise do discurso**. 2006. 275 f. Dissertação (Mestrado em Ciências Humanas) - Universidade Federal de Uberlândia, Uberlândia, 2006.
- SILVA, M. M. F. **Geografia dos Transportes no Brasil**. Rio de Janeiro: IBGE, 1949.
- SILVA JUNIOR, R. F. Circulação, epistemologia e a construção de um ramo da ciência geográfica. **Boletim Campineiro de Geografia**, v. 2, n. 3, 2012, p. 389-417.
- SILVEIRA, M. R. Circulação, transportes e logística: construção epistemológica e perspectivas. In: SILVEIRA, M. R. (org.). **Circulação, transportes e logística: diferentes perspectivas**. São Paulo: Expressão Popular, 2011, p. 21-68.
- TRAVASSOS, M. **Introdução à Geografia das comunicações brasileiras**. Rio de Janeiro: Livraria José Olímpio Editora, 1942.
- VALLAUX, C. **El suelo y el Estado**. Madrid: Daniel Jorro, 1914.
- VENCESLAU, I. **Correios, logística e uso do território**: o serviço de encomenda expressa no Brasil. 2014. f. Dissertação (Mestrado em Geografia) – Faculdade de Filosofia, Letras e Ciências Humanas, Universidade de São Paulo, São Paulo, 2017.

Author's contribution

Bruno Candido dos Santos: Analysis of textbook collections in Brazil.

Péter Bagoly-Simó: Analysis of textbook collections from Mexico, Peru, Costa Rica and Venezuela.

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