

Socialist Indoctrination in School Textbooks: The Case of “Colección Bicentenario” in Venezuela

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Abstract

We assess the nature and extent of socialist indoctrination in elementary school textbooks published by the government of Hugo Chávez in Venezuela. Our methodology consists of systematically comparing these textbooks with those published by previous administrations. We perform a qualitative comparison by coding relevant categories and a quantitative comparison using text mining. We find strong evidence of socialist indoctrination in the textbooks published by the government of Hugo Chávez relative to those we use as a benchmark. The most common topics present in the former include the promotion of income redistribution, government-provided goods, and collective effort.

JEL Classification: A2, I21, P36, P50

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I. Introduction

One of the most common features of socialist regimes is their emphasis on public education. The *Likbez* campaign introduced by Lenin in 1919, for example, mobilized vast amounts of resources to “eliminate illiteracy” during the Bolshevik Revolution.¹ Similarly, two years after the victory of the Cuban Revolution in 1958, Fidel Castro launched one of the most ambitious literacy campaigns in the world,

¹ The literacy rate in the Soviet Union increased from approximately 24 percent before 1917 to approximately 80 percent before World War II (Grenoble 2003).

mobilizing teachers and volunteers all around the island.² More recently, in 1999, Hugo Chávez embarked on a radical reform of the Venezuelan education system only months after coming to power and declaring Venezuela a socialist nation. The reform included the development of a new curriculum and the deployment of educational “missions” or campaigns.³

While socialist leaders are quick to claim that their educational reforms improve outcomes and increase inclusion, the truth is that those reforms also include important political goals. As early as 1923, the Soviet Education Law indicated that “the whole organization of school life should promote proletarian class consciousness in the minds of pupils and create knowledge of the solidarity of labor in its struggle with capital” (Pinkevich 1930). In Cuba, the 1978 Code of Childhood and Youth provided that the education system should “work for the efficient protection of youth against all influences contrary to their communist formation” (Steinmetz 2012).⁴

The political goals of Venezuela’s education system under Chávez were equally bold. The new Bolivarian Curriculum was clearly designed to educate children about socialism using the ideas and writings of Karl Marx, “Che” Guevara, and Simón Bolívar. The Venezuelan minister of culture declared in 2009 that the curriculum should help children eliminate “capitalist thinking” and better understand the ideas and values “necessary to build a socialist country” (MercoPress 2009).

In 2011, the Chávez administration published a new set of school textbooks called *Colección Bicentenario* (Bicentennial Collection). The textbooks followed the new curriculum and the government distributed more than 40 million copies free of charge to approximately 80 percent of the schools in the country, reaching more than six million children and adolescents (Oré 2014). The presence of socialist indoctrination and pro-government messages in these textbooks was evident to many involved in education. Teachers

² The Cuban literacy campaign increased the literacy rate from approximately 70 percent in 1959 to 96 percent in 1962 (Kellner 1989).

³ Venezuela’s public expenditure on education increased from 5 percent of GDP in 1994 to approximately 7 percent in 2009; the literacy rate increased from 90 percent in 1990 to 95 percent in 2009 (World Bank 2017). For extensive accounts of Venezuela’s educational missions, see Griffith and Williams (2009) and Duffy (2015).

⁴ In fact, the code mandated a three-year prison sentence for parents who taught a child ideas contrary to the official curriculum, i.e., ideas contrary to communism (Hudson 2002).

reported that these textbooks taught arithmetic using government food programs, English by having children recite where Hugo Chávez was born, and civics enumerating the reasons why kids and the elderly should thank him (Dreier 2015).

In the current study, our goal is to assess the nature and extent of socialist indoctrination in the *Colección Bicentenario* textbooks, focusing on the books devoted to social sciences. To conduct this assessment, we compare the *Colección Bicentenario* textbooks with similar school textbooks published before Chávez came to power. The pre-Chávez textbooks were also devoted to social sciences and were used in schools from 1978 through 1986. We perform a qualitative comparison by coding relevant socioeconomic and political categories and also a quantitative comparison using automated text mining.

The assessment of the nature and extent of socialist indoctrination in school textbooks is important for different economic, sociological, and anthropological reasons. American philosopher Philip Smith (Smith 1965) defines indoctrination as the process of teaching “a set of beliefs or a point of view in such a manner as to create the impression openly or subtly that what is taught is so true and important to the individual or social well-being that, by contrast, all possible alternatives are false and dangerous.”⁵ Thus, children indoctrinated to socialism in Venezuela might grow up believing that such an economic and political system is the only true and safe alternative. In other words, indoctrination can determine the ideology or shared cognitive paradigms of the generations exposed to it (North 1981; Greif and Mokyr 2016). As a result, Pareto-improving changes in society that do not fit these paradigms might be blocked despite their potential benefit (Iyigun and Rubin 2017).

II. Related Literature

It has been largely argued that one of the goals of public education is to indoctrinate.⁶ Lott (1990), for example, argues that indoctrinating, or “instilling the right views,” allows political entrepreneurs to lower the public opinion cost of wealth transfers and, therefore, to maximize support. In a follow up study, Lott (1999) argues that,

⁵ Similarly, Arthur (2003) defines indoctrination as the teaching of an idea “that is true or universally accepted regardless of evidence to the contrary or in the absence of evidence at all. It is a pejorative term.”

⁶ For surveys of this literature see Kremer and Sarychev (2000), Lott (1987), and Sowell (1995).

because totalitarian governments create larger wealth transfers, they also experience greater returns from indoctrination. This hypothesis is consistent with the cases of the Soviet Union, Cuba, and Venezuela. Although Chávez was elected democratically, he changed the country's constitution and coopted multiple spheres of power to maintain a quasi-totalitarian reign.

Our study is closely related to that of Abbott, Soifer, and Vom Hau (2017), who assess the extent of nationalistic ideology embedded in the *Colección Bicentenario* textbooks. These authors perform qualitative comparisons of these textbooks with textbooks from before 1999.⁷ While they find important evidence of nationalistic ideology embedded in the *Colección Bicentenario* textbooks, they argue that teachers in Venezuela resisted this ideology and provided a buffer that reduced its impact on children. Given the overlap of political and economic categories emphasized by nationalism and socialism, some of our findings are consistent with those of this study. For example, we both find that the *Colección Bicentenario* textbooks glorify Simón Bolívar as a socialist and anti-imperialist liberator.

Del Valle and Liberatore (2016) also study the *Colección Bicentenario* textbooks. While we analyze the social sciences textbooks written for all levels of primary school, these authors analyze one history textbook written for high school sophomores. Their findings are, however, consistent with ours. They find that the textbook “manipulates the truth,” uses “subliminal messages,” and is clearly written “under socialist ideas.”

The methodology we use to perform our qualitative comparison has been extensively used in many disciplines. An early example applied to school textbooks is Litt (1963), who reviews the civic education textbooks used in three different socioeconomic communities in the Boston metropolitan area. Assessing whether different socioeconomic communities differ in the kinds of school textbooks they use, Litt (1963) randomly selects a sample of paragraphs from the textbooks and classifies their content using five different codes to represent different political attitudes. Another important reference for our purposes is that of Cheung, Monroy, and Delany (2017), who use the same coding methodology to examine

⁷ Abbott, Soifer, and Vom Hau (2017) focus on primary school textbooks dedicated to social sciences and history written for the fourth, fifth, and sixth grades.

the prevalence of learning-related values in children's storybooks in the United States, China, and Mexico.

Scholars have also used qualitative analysis to study the treatment of different topics in college economics textbooks. For example, Eyzaguirre, Ferrarini, and O'Roark (2014, 2016, 2019) and Fike and Gwartney (2015) study how different samples of these textbooks treat government and market failure, public choice, and market outcomes; Coyne and Lucas (2016) focus on the treatment of national defense as a public good; Hall, Matti, and Neto (2019) cover rent-seeking behavior; and Johansson (2004) and Kent (1989) cover entrepreneurship.

Our approach is slightly different from these examples. We start our qualitative analysis without a predefined set of specific topics. While we compare the textbooks of Colección Bicentenario with those of the pre-Chávez period in terms of socialist indoctrination, we iteratively define our coding categories as we examine the various volumes. We also use automated text mining as a complementary quantitative approach, which allows us to compare word choice without relying on our own interpretation of the text. Our overall approach, therefore, provides a more comprehensive analytical base. We let the textbooks inform us of the topics in which they differ rather than limiting our analysis to specific hypotheses.

Despite being successfully used in a number of fields, automated text mining is still a novel approach to analyzing school textbooks. Text mining allows researchers to compare language usage and trace how it changes over time (Lauer, Brumberger, and Beveridge 2018). For example, scholars have used automated text mining to examine the use of gendered language in the description of male and female cadets at the United States Military Academy (Caddell and Lensing 2019), the way language in new academic fields (e.g., public diplomacy) has evolved over time (Sevin, Metzgar, and Hayden 2019), the use of positive and negative wording in headlines dealing with highly debated topics such as vaccination (Xu and Guo 2018), the words used by activists and the positive and negative words used by the media to describe the actions of activists (Casas, Davesa, and Congosto 2016), and the frequency of particular keyword usage across time in Westminster-style parliamentary systems (Eggers and Spirling 2018).

III. Qualitative Analysis

We review the social science textbooks of Colección Bicentenario assigned to students in the first through fifth grades. The books range from 131 to 179 pages (with an average of 156 pages).⁸

To produce a relevant comparison, we juxtapose the Colección Bicentenario textbooks to social sciences textbooks assigned to students in the first through fifth grades before Chávez came to power. These textbooks were published and used in schools between 1978 and 1986 during the administrations of Carlos Pérez, Luis Herrera and Jaime Lusinchi. They range from 75 to 180 pages in length (with an average of 114 pages).

The respective governments used similar processes to produce or select the ten textbooks we compare. The pre-Chávez textbooks were either selected from an existing set by the ministry of education, or commissioned to teachers and pedagogues chosen by the same authority. Only two of these textbooks have the same author. In the case of Colección Bicentenario, the textbooks were all commissioned to four authors. One was a coauthor of all five textbooks, two were coauthors of three and one was a coauthor of two. Thus, the Colección Bicentenario textbooks tend to be more uniform in content and style than the pre-Chávez textbooks.

The pre-Chávez textbooks were the official, or government-approved, textbooks for all public schools. The Colección Bicentenario textbooks were part of the curriculum in the vast majority of schools in the country but were not officially part of the national education curriculum, as this status would have required the passage of new legislation (Ministerio del Poder Popular para la Educación 2007). All textbooks but one, from the pre-Chávez period, were free to students.⁹

We read both sets of textbooks and recorded passages in which the text transmitted a concept, idea, recommendation, or example suggesting socialist indoctrination as defined in Smith (1965). The definition of socialism in our study comes from Latin America's socialism of the 21st century ideology. Under this interpretation of

⁸According to Venezuela's Ministry of Popular Power for Education, the Bolivarian curriculum aimed to develop "a new society with Venezuelan identity and a sense of justice, fraternity, peace, equity and freedom... committed to defend the sovereignty, unity and integration of Latin America and the Caribbean" (Ministerio del Poder Popular para la Educación 2007).

⁹Appendix A lists the ten textbooks we compare.

socialism, the political and economic system favors collective or governmental ownership of the means of production but does not directly suppress private property. In most cases, however, these regimes controlled strategic natural resources and promoted aggressive income redistribution in favor of workers, the poor, and their political supporters. They accompanied these policies with a strong nationalistic and patriotic discourse (Wilpert 2007; Burbach and Piñeiro 2010).¹⁰ For contrast, we also recorded passages in which the text transmitted a concept, idea, recommendation, or example suggesting the benefits of capitalism or free trade.

We used an iterative process to analyze textual content. We first read the textbooks for first grade and identified a number of initial categories to code. We then added or consolidated categories as we read the rest of the textbooks. Coding required careful attention to word choice, tone, and idiomatic expressions. Whenever we found a passage that could fall under one of the categories, we recorded a “1” under that category and noted the number of pages that the passage covered. We then added the 1s under each category and the number of pages covered. Some passages transmitted concepts, ideas, recommendations, or examples related to two or more categories. In those cases, we recorded a “1” for each category. Two coauthors of this paper coded the text independently. Initial agreement between the two coauthors was 82 percent. We resolved discrepancies by reading passages again and discussing the appropriate classification.

The coding categories include the following:

1. Socioeconomics

- Objective theory of value: Promotion of the Marxist idea that the value of goods and services depends on the amount of labor required to produce them.
- Surplus value (*plusvalía*): Promotion of the Marxist idea that worker compensation is typically unjustly low, as it does not reflect the full value produced by labor in the production process.
- Income redistribution: Promotion of economic equality as a social goal requiring income or wealth redistribution through government intervention.

¹⁰ Other Latin American leaders who subscribed to the socialism of the 21st century ideology include Evo Morales in Bolivia, Néstor and Cristina Kirchner in Argentina, Lula da Silva in Brazil and Rafael Correa in Ecuador. Although these leaders were elected democratically, several of them changed their countries' Constitution to enable them to seek re-election and expand their political power.

- Promotion of government-provided goods: Promotion of the idea that goods and services produced and/or provided by the government are better, cheaper or more widely distributed than private goods.
- Protectionism: Promotion of the idea that buying domestically produced goods or services over imports is better for the domestic economy.
- Openness to international trade: Remaining open or unbiased against the purchase of foreign goods and services.
- Rejection of capitalism: Rejection of private ownership of resources and allocation of goods and services through free markets.
- Benefits of capitalism: Description of the incentives generated by private ownership of resources and the benefits of allocating goods and services through free markets.

2. Social and individual behavior

- Promotion of collective effort and decisions: Praise or exaltation of the virtues of collective effort or behavior.
- Promotion of individual effort and decisions: Praise or exaltation of the virtues of individual effort or behavior.
- Distrust of entrepreneurship: Emphasis on the potential negative consequences of private entrepreneurship and free enterprise, such as income inequality and environmental damage.
- Rejection of consumerism: The idea that people should not purchase goods and services in ever-greater amounts.

3. Politics

- Patriotism: Strong preference for one's country (including domestically produced goods and services) and distrust of anything foreign.
- Glorification of the political leader or caudillo: Praise, applause, or exaltation of the current political leader or caudillo.

A. Results

Figures 1 through 3 summarize our results. The prevalence of socialist indoctrination was evident in all three categories.

Within the socioeconomic categories (see figure 1), strong emphasis on surplus value, the need for income redistribution, and the promotion of government-provided goods was highly evident in the Colección Bicentenario textbooks. Most notably, on average, almost 10 percent of the pages in each of the five Colección Bicentenario textbooks included passages conveying the need for income redistribution (more than 16 percent in the fifth-grade textbook). For comparison, on average, less than 1 percent of pages in the pre-Chávez textbooks contained passages dedicated to this category.

Figure 1. Socioeconomic categories

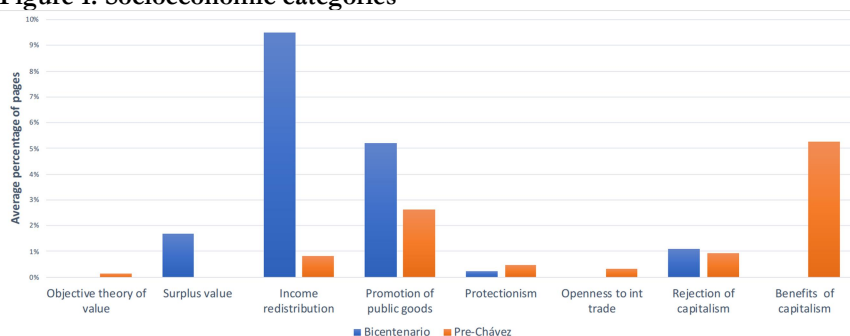
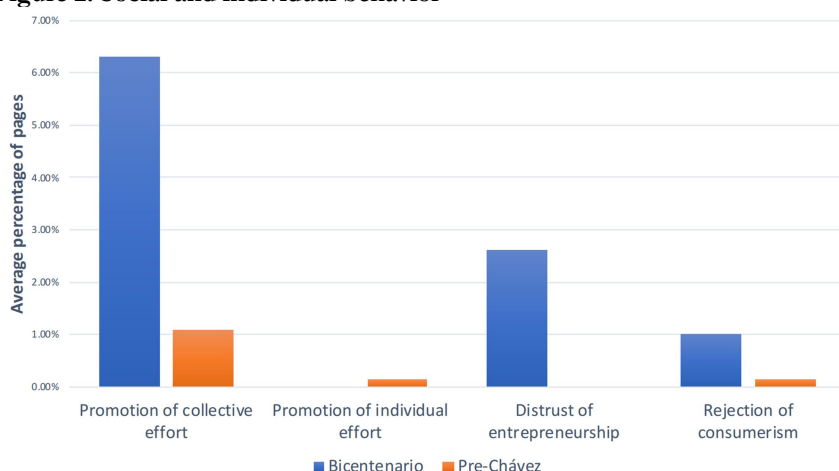


Figure 2. Social and individual behavior

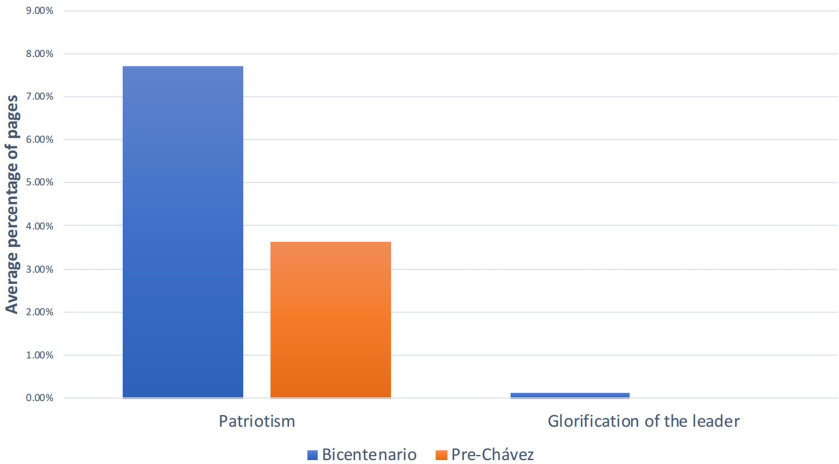


Although surplus value (*plusvalía*) appears on only 1.7 percent of the pages in the Colección Bicentenario textbooks, this percentage is significant as not a single page mentioned this category in the pre-Chávez textbooks. In addition, while both sets of textbooks promoted the benefits of government-provided goods, the frequency

of this category in the Colección Bicentenario (5.2 percent) was twice the frequency in the pre-Chávez textbooks (2.6 percent).

On average, both sets of textbooks dedicated approximately 1 percent of their pages to passages rejecting capitalism. However, more than 5 percent of the pages in the pre-Chávez textbooks described benefits of capitalism, while not a single page from the Colección Bicentenario textbooks did.

Figure 3. Politics



Within the social and individual behavior categories (see figure 2), the differences between the Colección Bicentenario and pre-Chávez textbooks were even more pronounced. The promotion of collective effort and the rejection of consumerism were approximately six and seven times more prevalent in the former than in the latter (6.29 percent vs. 1.1 percent and 1.01 percent vs. 0.15 percent, respectively). Similarly, passages displaying distrust of entrepreneurship appeared on 2.6 percent of the pages of Colección Bicentenario textbooks, but no equivalent passages appeared in the pre-Chávez textbooks. Finally, hardly any of the textbooks promoted individual effort.

Within the political categories (see figure 3), we found that the Colección Bicentenario textbooks included more than twice as many pages dedicated to promoting patriotism (where mentions of Simón Bolívar were prominent) than the pre-Chávez textbooks. However, we only found one page in the Colección Bicentenario textbooks that glorified Hugo Chávez.

B. Examples

The following are examples of indoctrinating passages found in the Colección Bicentenario textbooks, coded under the aforementioned categories. Notice that these passages tend to use strong language, appeal to emotion, and offer conclusions without entertaining alternative explanations or evidence.

- Surplus value and patriotism
We have a Republic thanks to Simón Bolívar. However, large land properties still exist and there are still poor peasants who work for large land owners. In these properties, the master earns a lot of money by exploiting these peasants. This injustice that keeps peasants without land must end. (Social Sciences Colección Bicentenario 3rd grade, p. 153)
- The need for income redistribution
The North-South conflict resides on economic inequality, which produces social inequality. Society suffers a disease that can be cured. This disease is nothing but unequal wealth distribution. (Social Sciences Colección Bicentenario 4th grade, p. 50)
Poor kids are born every day. What an inhumane reality! They are born poor . . . Is it that poverty is a biological factor inherited by kids from their parents? No. Poverty is caused by the economic inequality that persists in society. (Social Sciences Colección Bicentenario 2nd grade, p. 74)
- Promotion of government-provided goods
The sun asked the moon: What if their little eyes are sick and they cannot read in school? And the moon answered: They are given glasses and that's it. The sun then asked: What if they don't have money to buy them? And the moon answered: No *chamo* (friend), in Venezuela glasses are *gratiñan* (free)! (Social Sciences Colección Bicentenario 1st grade, p. 14)
- Promotion of government-provided goods and rejection of capitalism
Now we have social production companies. Their members don't get wealthy. These companies charge lower prices, engage in charitable activities, help the poor and distribute their profits among all members. These companies do not

look at all like their capitalist counterparts, do they? (Social Sciences Colección Bicentenario 5th grade, p. 17)

- Protectionism and rejection of consumerism

We need to be responsible consumers. There are kids your age and even older who like to wear brand name shoes and clothes. There are even people who don't eat well in order to have money to buy these products. But what is a brand name if not a powerful company, in most cases foreign, that keeps making more money by selling its products to the entire world, depleting the family budget? Let's remember that in Venezuela and Latin America, most people are poor. Let's say NO! to those brand name shoes and clothes because the ones made in Venezuela have the three Bs: *bueno* (good), *bonito* (pretty) and *barato* (cheap). (Social Sciences Colección Bicentenario 4th grade, p. 132).

- Rejection of capitalism and patriotism

Bolivia is the perfect example. It is the poorest country in South America and yet, apart from rich vegetation, it has minerals like zinc, copper and silver and is the second largest producer of tin. It has small amounts of oil but plenty of natural gas. Bolivia did start exporting natural gas but continued to be poor. Who controls the production and distribution of those commodities? Foreign companies from rich countries from which Bolivia purchases food, machinery and other expensive goods. In 2006, however, Bolivia nationalized its hydrocarbons and has increased its investment in solutions to social problems that affect the people. (Social Sciences Colección Bicentenario 4th grade, p. 48)

- Rejection of capitalism and surplus value

The human and environmental problems worsened at the beginning of the 20th century because (a) the European industry experienced strong growth and the one in the United States and other countries started to develop, and (b) inequality increased between the proletariat majority affected by poverty and the rich and small group of factory owners and commercial companies. (Social Sciences Colección Bicentenario 2nd grade, p. 137)

The attitude toward capitalism and private companies was markedly different in the textbooks from the pre-Chávez period:

The C.A. Electric Company of Venezuela is a private company. This service costs a lot of money. When we pay our bill we are helping the company to function well. (Social Sciences 1978, 4th grade, p. 80)

Also interesting is the different treatment that certain historical episodes received in the two sets of textbooks. The following example shows how the first-grade textbook from the pre-Chávez period described oil production at the beginning of the twentieth century:

At the beginning of the 20th Century, Venezuela became an important oil producing country. This meant that massive amounts of money entered the country and were used to modernize our nation. Oil improved our economy and allowed us to raise our standards of living. In a short period of time we went from being an agricultural country to an oil-exporting country with vast economic resources. (Social Sciences 1986, 1st grade, p. 40)

The following is how the same historical episode was described in the first-grade Colección Bicentenario textbook:

This phenomenon is known as the ‘peasant exodus.’ According to the dictionary, ‘exodus’ means to depart, to leave. They left the rural areas and had to change jobs. They went from being peasants to being oil workers. But do not believe for a second that their life conditions improved. There are many novels and stories that describe the sufferings of these workers as they were being exploited by their foreign bosses. (Social Sciences Colección Bicentenario 1st grade, p. 19)

The treatment of Spanish colonization was also strikingly different. The following is a passage from the first-grade textbook from the pre-Chávez period:

With the arrival of the Spaniards we also got big ships that facilitated transportation. They also brought donkeys, mules and horses that were used to transport products from farms to towns and ports. (Social Sciences 1986, 1st grade, p. 48)

The following is a passage from the first-grade textbook of Colección Bicentenario:

When we see in this picture the face of a poor Peruvian indigenous person we understand that the injustice brought on by Spanish colonialism is still present today. This injustice

is what prompted this person's ancestors to rebel. (Social Sciences Colección Bicentenario 1st grade, p. 19)

IV. Quantitative Analysis

The goal of this analysis was to use text mining to verify whether the two sets of textbooks differed significantly in their choice of words. We then assessed whether those differences suggest the presence of socialist indoctrination in the Colección Bicentenario textbooks vis-à-vis the pre-Chávez textbooks.

Both sets of textbooks were machine readable in PDF format. We followed the steps from Silge and Robinson (2017):¹¹

1. Extract all words from the textbooks and store them along with the page number where the word appears.
2. Add the grade level to the data frame for each textbook and combine the five data frames into one data frame.
3. Remove “stop words,” short words, underscores, whitespace, numeric digits, and words containing any stray characters.
4. Normalize the remaining words using stems and lemmas so that words with the same root are all categorized together as the same word:

(a) Stems are the roots or the parts of the words to which one adds inflectional changes or affixes. For example, the stem of “trabajo” is “trabaj.” Thus, stems are not always actual words.

(b) Lemmas are words that represent a family of words with the same stem. For example, the lemma for “work” (“trabajo”) represents itself and also the words for male worker (“trabajador”), female worker (“trabajadora”), and workers (“trabajadores”).¹²

5. Calculate the overall proportion for each lemma using the following formula:

$$\text{proportion for lemma}_i = \frac{\text{frequency of lemma}_i}{\sum_{i=1} \text{frequency of lemma}_i}$$

¹¹ Appendix B contains a detailed description of each step used to calculate the different metrics. The R code used to analyze the text is available as an R package that can be installed and run using the free R statistical language. The package is available at <https://github.com/robiRagan/prePostChavezTextbooks>.

¹² Manning, Raghavan, and Schütze (2008) discuss the process of using lemmas during text analysis.

The aforementioned steps yielded 24,388 lemmas in the pre-Chávez textbooks (3,763 of which were unique to these textbooks) and 63,565 lemmas in the Colección Bicentenario textbooks (6,852 of which were unique to these textbooks).

Many of the most common lemmas were words such as “venezolano” (Venezuelan), “población” (population), or “ciudades” (cities), which are commonly used in school textbooks in Venezuela and do not necessarily have indoctrinating elements. To identify indoctrinating elements better, we compiled a list of keywords that are typically used in Spanish to convey economic, social, or political ideas in the social sciences. We then calculated the proportions of these keywords in each set of textbooks using the same formula as above. We used the following list of keywords:

- Surplus value/objective theory of value: “abuso” (abuse), “apropiación” (appropriation), “aprovechar” (take advantage of), “capital,” “despojo” (dispossession), “obreros” (workers), “slave” (esclavo), “costo” (cost), “trabajo” (work), “explotación” (exploitation)
- Subjective theory of value: “oferta” (supply), “demanda” (demand), “precio” (price), “mercado” (market)
- Income/wealth redistribution: “comunidad” (community), “derechos” (rights), “desigualdad” (inequality), “distribución” (distribution), “igualdad” (equity), “injusticia” (injustice), “justicia” (justice), “repartición” (repartition), “indígena” (indigenous), “pueblo” (the people), “lucha” (struggle), “popular”
- Government-provided goods: “bienes públicos” (government-provided goods), “bienestar” (welfare), “educación” (education), “gratis” (free), “salud” (health), “servicios” (services), “vivienda” (housing)
- Nationalism: “Bolívar,” “patria” (homeland), “Latinoamérica” (Latin America), “república” (republic), “Venezuela,” “colonia” (colony)
- Economics/production: “crecimiento” (growth), “desarrollo” (development), “recursos” (resources), “población” (population), “economía” (economy), “petróleo” (oil)

A. Results

We first looked at all of the lemma proportions across the two sets of textbooks. We then limited ourselves to the keywords.

Figure 4. Top 10 lemma proportions

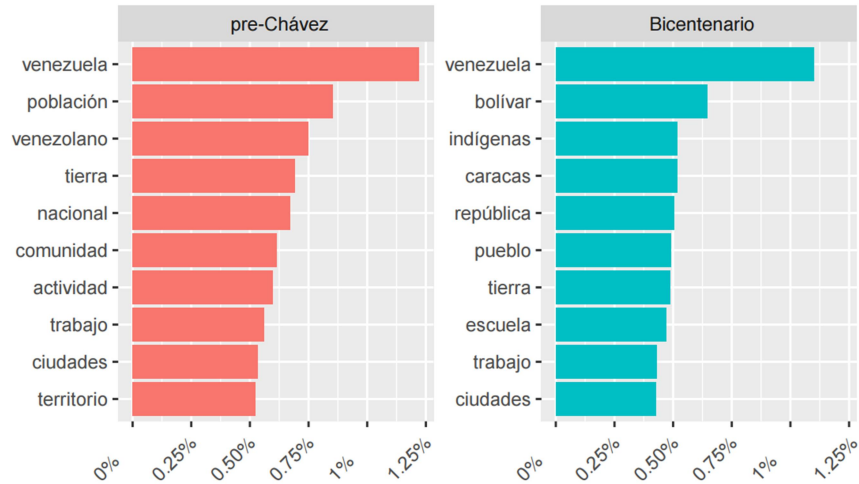


Figure 4 displays the ten highest lemma proportions for the two sets of textbooks. Although they seem small, given the large number of lemmas in each set of textbooks, the percentages represent a significant number of instances in which the lemmas appear. For example, 1 percent represents 243 instances in the pre-Chávez textbooks and 635 instances in the Colección Bicentenario textbooks. Only three lemmas appear in both lists: “Venezuela,” “ciudades” (cities), and “trabajo” (work). The rest of the lemmas were unique.

The frequent appearance of “Bolívar” in the Colección Bicentenario textbooks is consistent with the findings of our qualitative analysis under political categories and with the findings of Abbott, Soifer, and Vom Hau (2017). The high frequency of “república” (republic) in the same textbooks is also not surprising, for this word appears in the new name the country adopted after Hugo Chávez’s 1999 constitution (the Bolivarian Republic of Venezuela).

The two other unique lemmas that might have indoctrinating elements in the Colección Bicentenario textbooks are “indígenas” (indigenous) and “pueblo” (the people). Indeed, the frequent mentioning of indigenous people in the Colección Bicentenario textbooks was typically accompanied by social demands in their favor. In addition, while “pueblo” is synonymous with “población” (population), the former is typically reserved to convey a social or political reference to “the people” or “the common people.” In the pre-Chávez textbooks, the lemma “población” is in the top ten, but “pueblo” is not.

Figure 5. Top 10 keyword lemma proportions

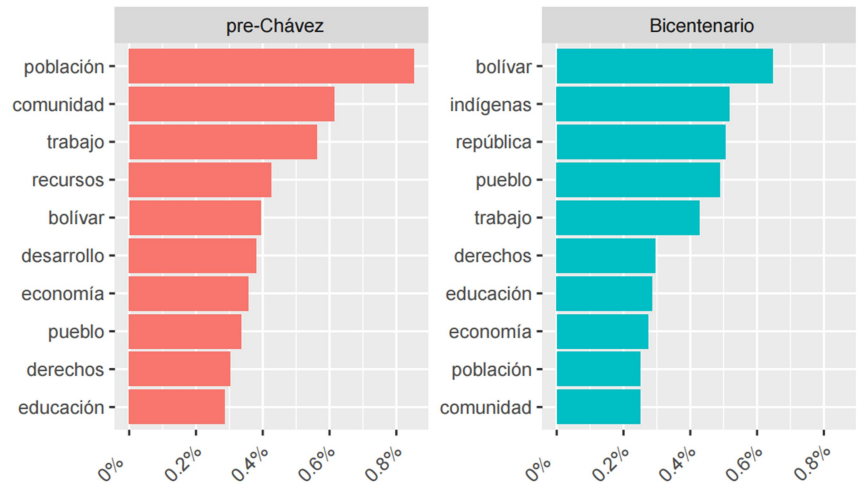
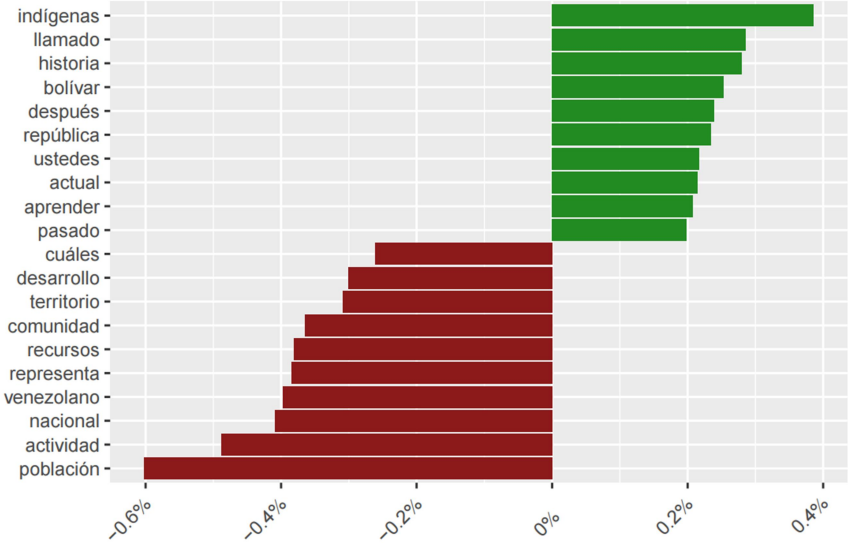


Figure 5 displays the ten highest keyword proportions for the two sets of textbooks. The higher similarity we found across both sets of textbooks is not surprising given that we limited the set of lemmas to the keyword list. The only two unique keywords in the Colección Bicentenario textbooks were “indígenas” (indigenous) and “república” (republic). The only two unique keyword lemmas in the pre-Chávez textbooks were “recursos” (resources) and “desarrollo” (development).

This finding shows the strong emphasis on the indigenous people, almost always attached to social demands, in the Colección Bicentenario textbooks. It also suggests that the pre-Chávez textbooks were largely concerned with the production and development processes. Combining this result with the results of our qualitative analysis, the following pattern emerges: the Colección Bicentenario textbooks were characterized by a concern with the redistribution of the economic pie, while the pre-Chávez textbooks were characterized by a concern with producing the economic pie.

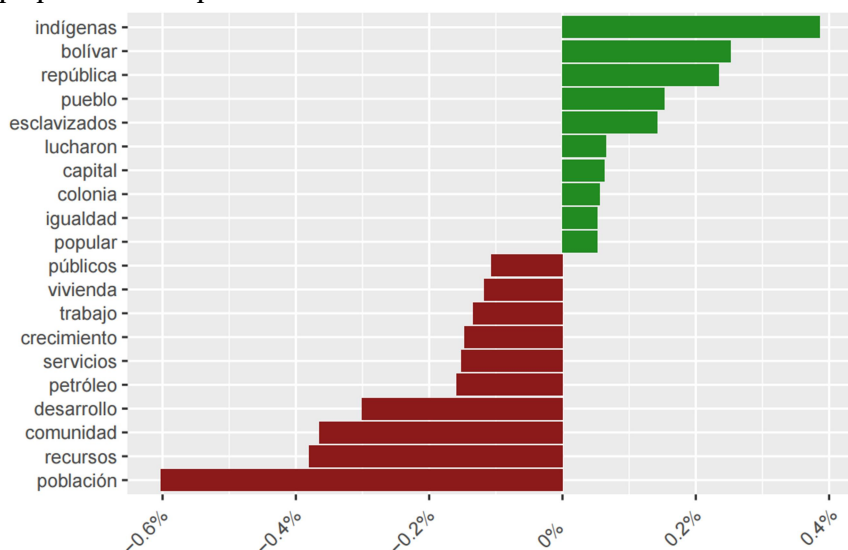
Figure 6. Top 10 positive and top 10 negative changes in lemma proportions from pre-Chávez to Colección Bicentenario textbooks



In figure 6, we return to the set of all lemmas and show those whose proportions changed the most from the pre-Chávez textbooks to the Colección Bicentenario textbooks. As expected, we found large increases in lemmas such as “indígenas” (indigenous), “Bolívar,” and “República” (Republic), and large drops in lemmas such as “desarrollo” (development) and “recursos” (resources). Notice that “población” (population) had the largest drop, as the Colección Bicentenario textbooks preferred the word “pueblo” (the people).

In figure 7, we again limit the lemmas to only those on our keyword list. This figure presents a much clearer picture of how the language changed from the pre-Chávez textbooks to the Colección Bicentenario textbooks. The words with the largest proportional increases have a distinct political connotation. To the familiar “indígenas” (indigenous), “Bolívar,” “República” (Republic), and “pueblo” (the people), we now add “esclavos” (slaves), “lucha” (struggle), “capital,” “colonia” (colony), “igualdad” (equality), and “popular.” The words with the largest proportional drops include some we have seen before, such as “población” (population), “recursos” (resources), and “desarrollo” (development), as well as “petróleo” (oil), “servicios” (services), “crecimiento” (growth), and “trabajo” (labor), among others. This set of words confirms our previous finding regarding emphasis on production and development in the pre-Chávez textbooks and redistribution or the presence of social conflict in the Colección Bicentenario textbooks.

Figure 7. Top 10 positive and top 10 negative changes in keyword lemma proportions from pre-Chávez to Colección Bicentenario



V. Conclusion

Our goal was to assess the nature and extent of socialist indoctrination in the social sciences books in the Colección Bicentenario textbooks published and distributed by the Chávez administration starting in 2011. To do so, we compared these textbooks to similar school textbooks published before Chávez came to power.

Our findings suggest the presence of strong elements of socialist indoctrination in the Colección Bicentenario textbooks. Our qualitative analysis revealed that these textbooks put a much stronger emphasis on the idea of surplus value, the need for income redistribution, the promotion of government-provided goods, the promotion of collective effort, the rejection of consumerism, the distrust of entrepreneurship, and the promotion of patriotism than the pre-Chávez textbooks.

For example, on average, almost 10 percent of the pages in each of the five Colección Bicentenario textbooks included passages conveying the need for income redistribution. This number was less than 1 percent in the pre-Chávez textbooks. Similarly, the promotion of collective effort and the rejection of consumerism were approximately six and seven times more prevalent, respectively, in the former than in the latter. Also, the Colección Bicentenario textbooks included more than twice as many pages dedicated to promoting

patriotism (where mentions of Simón Bolívar were prominent) than the pre-Chávez textbooks.

Our quantitative analysis revealed that the words with the largest proportional increases from the pre-Chávez textbooks to the Colección Bicentenario textbooks were ones with distinct political and socialist connotations. The words “indígenas” (indigenous), “Bolívar,” “república” (republic), “pueblo” (the people), “esclavos” (slaves), “lucha” (struggle), “capital,” “colonia” (colony), “igualdad” (equality), and “popular” had the largest proportional increases. On the other hand, the words “población” (population), “recursos” (resources), “desarrollo” (development), “petróleo” (oil), “servicios” (services), “crecimiento” (growth), and “trabajo” (labor) had the largest drops.

The pattern that emerged is that the Colección Bicentenario textbooks prioritized teaching the need for redistributing the economic pie and the social conflict that process generates, while the pre-Chávez textbooks were more concerned with teaching the economic problem of generating the pie in the first place.

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Appendix A. Textbooks Compared

1. Pre-Chávez

- María J. Bravo Díaz. 1986). *Mi Libro Integral 1er Grado Estudios Sociales*. Caracas: Colegial Bolivariana C. A.
- Guillermo Morales. 1978. *Estudios Sociales 2do Grado*. Caracas: Colegial Bolivariana C. A.
- Guillermo Morales. 1986. *Estudios Sociales 3er Grado*. Caracas: Colegial Bolivariana C. A.
- Aura Ramirez de Barreto (Directora). 1978. *Ciencias Sociales 4to Grado*. Madrid: Teduc y Santillana.
- Nelson Romero. 1986. *Estudios Sociales 5to Grado*. Caracas: Colegial Bolivariana C. A.

2. Colección Bicentenario

- América Bracho, David Ortega, and Nohemí Frías. 2013. *Viva Venezuela, Ciencias Sociales 1er Grado Nivel de Educación Primaria del Subsistema de Educación Básica*. Caracas: Ministerio del Poder Popular Para la Educación.
- América Bracho, David Ortega, and Nohemí Frías. 2013. *Viva Venezuela, Ciencias Sociales 2do Grado Nivel de Educación Primaria del Subsistema*

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- América Bracho, David Ortega, and Nohemí Frías. 2013. Viva Venezuela, Ciencias Sociales 3er Grado Nivel de Educación Primaria del Subsistema de Educación Básica. Caracas: Ministerio del Poder Popular para la Educación.
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- América Bracho and María León. 2013. Venezuela y su Gente, Ciencias Sociales 5to Grado Nivel de Educación Primaria del Subsistema de Educación Básica. Caracas: Ministerio del Poder Popular Para la Educación.

Appendix B. Quantitative Analysis Details

Data Cleaning Steps

1. Extract all words from the textbook and store them along with the page number where the word appears.

(a) The raw text from the PDF file for a single textbook is read in and stored as an object referred to as **rawTextbookObject**.

(b) **rawTextbookObject** is then split to make each page in the original text into its own data frame. These frames are referred to as **rawPageDataFrames**.

(c) The **rawPageDataFrames** are stored as a single R list referred to as **rawPageList**.

(d) For each **rawPageList**, text is tokenized, giving each word its own row in the first column of the data frame. The data frames are now referred to as **tokenizedPageDataFrames** and the list storing all the data frames is the **tokenizedPagesList**.

(e) The second column in each of the **tokenizedPageDataFrames** contains the page number where each word appeared.

(f) All of the **tokenizedPageDataFrames** in **tokenizedPagesList** are merged into one data frame that contains all of the words in the textbooks in the first column and the page where the word was found in the second column. This frame is referred to as **oneTokenizedTextbookDataFrame**.

(g) Steps 1a through 1f are run for each of the five textbooks in each set.

2. Add the grade level to the data frame for each textbook and combine the five data frames into one data frame.

(h) A third column is added to each **oneTokenizedTextbookDataFrame** to contain the grade level for the textbook.

(i) The five **oneTokenizedTextbookDataFrames** are all combined into one data frame.

3. Steps 1 and 2 above are run for the second set of five textbooks. The result is one data frame that contains all of the words from all five of the pre-Chávez textbooks and one data frame that contains all of the words from all five Colección Bicentenario textbooks.

4. Remove “stop words,” short words, underscores, whitespace, numeric digits, and words containing any stray characters.

(j) Stop words are common short words that contain little information on their own. They are frequently discarded when analyzing single words in a text. The complete list of stop words is listed below. These words were all removed from the two data frames.

(k) Any word under five characters was removed from the analysis. Such words rarely provide any useful information on their own.

(l) Underscores and whitespace characters are sometimes generated when PDF files are read in for text analysis. These characters were removed.

(m) Numeric digits without any context contain little information, so such numbers were removed.

(n) When reading text from a PDF file, some words can contain stray characters such as periods or numbers, usually due to an encoding issue with the way PDFs store some characters. Words with these stray characters were removed. On a related note, the apostrophe symbol used in PDFs is encoded in a different way than the apostrophe symbol in text files. Thus, all apostrophes were corrected to be the same across the two data frames.

5. Create stems and lemmas for all words.

(o) Many words with the same meaning are not identical due to prefixes, suffixes, or conjugation. For example, in English, the words “run” and “running” would be distinct in a word count. In many cases, however, we might count them as the same using a process called stemming and lemming.

(p) Stemming takes words and reduces them to their roots. For example the words “distribución” (distribution), “distribuye” (distributes), “distribuido” (distributed), and “distribuyen” (distribute) all have the stem “distribu” in common.

(q) To create lemmas, we used the simple approach of assigning the most common word in a stem group as the lemma for all of the words in the stem group. For example, in the pre-Chávez data frame, the stem family for “boliv” contains the words “Bolívar” 327 times, “Bolivariana” eighty-two times, and “Bolivariano” one time. So, for this stem group, the most common lemma was the word “Bolívar.”

(r) All of the counts for the two textbook sets were based on the number of times a lemma appears in each textbook set. Below, we list some of the most common words across the data sets, along with their stems and lemmas.

6. Calculate the proportions for all lemmas.

(s) The proportion of each lemma was calculated using the following formula:

$$\text{proportion for lemma}_i = \frac{\text{frequency of lemma}_i}{\sum_{i=1} \text{frequency of lemma}_i}$$

7. Calculate the change in proportion from the pre-Chávez textbooks to Colección Bicentenario textbooks.

(t) Change in proportion was calculated using the following formula:

$$\text{change in proportion for lemma}_i =$$

$$\text{proportion for lemma}_i \text{ CB} -$$

$$\text{proportion for lemma}_i \text{ Pre} - \text{Chavez}$$

Stop Words

The stop words used in step 4 above include the following:

de, la, que, el, en, y, a, los, del, se, las, por, un, para, con, no, una, su, al, lo, como, ms, pero, sus, le, ya, o, este, sí, porque, esta, entre, cuando, muy, sin, sobre, también, me, hasta, hay, donde, quien, desde, todo, nos, durante, todos, uno, les, ni, contra, otros, ese, eso, ante, ellos, e, esto, mi, antes, algunos, qué, unos, yo, otro, otras, otra, él, tanto, esa, estos, mucho, quienes, nada, muchos, cual, poco, ella, estar, estas, algunas, algo, nosotros, mi, mis, tú, te, ti, tu, tus, ellas, nosotras, vosotros, vosotras, os, mío, mía, míos, mías, tuyo, tuya, tuyos, tuyas, suyo, suya, suyos, suyas, nuestro, nuestra, nuestros, nuestras, vuestro, vuestra, vuestros, vuestras, esos, esas, estoy, estás, está, estamos, estáis, están, esté, estés, estemos, estéis, estén, estaré, estarás, estar, estaremos, estaréis, estarán, estaría, estarías, estaríamos, estaríais, estarían, estaba, estabas, estábamos, estabais, estaban, estuve, estuviste, estuvo, estuvimos, estuvisteis, estuvieron, estuviera, estuvieras, estuviéramos, estuviérais, estuvieran, estuviese, estuvieses, estuviésemos, estuvieseis, estuviesen, estando, estado, estado, estados, estado, he, has, ha, hemos, habéis, han, haya, hayas, hayamos, hayáis, hayan, habré, habrás, habrá, habremos, habréis, habrán, habría, habrías, habríamos, habríais, habrían, había, habías, habíamos, habíais, habían, hube, hubiste, hubo, hubimos, hubisteis, hubieron, hubiera, hubieras, hubiéramos, hubierais, hubieran, hubiese, hubieses, hubiésemos, hubieseis, hubiesen, habiendo, habido, habida, habidos, habidas, soy, eres, es, somos, sois, son, sea, seas, seamos, seis, sean, seré, serás, ser, seremos, seréis, serán, sería, serías, seríamos, seríais, serían, era, eras, éramos, erais, eran, fui, fuiste, fue, fuimos, fuisteis, fueron, fuera, fueras, fuéramos, fuerais, fueran, fuese, fueses, fuésemos, fueseis, fuesen, siendo, sido, tengo, tienes, tiene, tenemos, tenéis, tienen, tenga, tengas, tengamos, tengáis, tengan, tendré, tendrás, tendrá, tendremos, tendréis, tendrán, tendría, tendrías, tendríamos, tendríais, tendrían, tenía, tenías, teníamos, teníais, tenían, tuve, tuviste, tuvo, tuvimos, tuvisteis, tuvieron, tuviera, tuvieras, tuviéramos, tuvierais, tuvieran, tuviese, tuvieses, tuviésemos, tuvieseis, tuviesen, teniendo, tenido, tenida, tenidos, tenidas, tened

Examples of Stems and Lemmas

word	stem	lemma
Venezuela	Venezuel	Venezuela
Bolívar	Boliv	Bolívar
Caracas	Carac	Caracas
escuela	escuel	escuela
República	Republ	República
historia	histori	historia
tiempo	tiemp	tiempo
indígenas	indigen	indígenas
tierra	tierr	tierra
pueblo	puebl	pueblo
América	Amer	América
España	Españ	España
personas	person	personas
población	poblacion	población
ciudad	ciud	ciudades
nacional	nacional	nacional
comunidad	comun	comunidad
familia	famili	familia
ustedes	usted	ustedes
trabajo	trabaj	trabajo
educación	educ	educación
indígena	indigen	indígenas
independencia	independen	independencia
territorio	territori	territorio

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