

## Human sexuality in the most distributed biology textbooks by the National Program of Textbooks 2015 in Brazil<sup>1</sup>

*O tema sexualidade humana nos livros didáticos de Biologia mais distribuídos pelo Programa Nacional do Livro Didático 2015*

*El tema sexualidad humana en los libros didácticos de Biología más distribuidos por el Programa Nacional del Libro Didáctico 2015*

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**Abstract:** Restricting the approach to sexuality in school's textbooks can be problematic, as failure to discuss human sexuality content leads to important questions and decisions about sexual health. Without discussion, these uncertainties may not be clarified. The lack of debate on the social issues of human sexuality can generate prejudice and discrimination against homosexuals. Thus, this study aimed to investigate how the two sets of biology textbooks distributed in Brazil by PNLD (National Program for Textbooks - PNLD), approach the theme. The specimens from 2015 and 2018 were investigated through content analysis to evaluate the four sets. We verified that the language present in the texts of the textbooks still presents a heteronormative pattern, not addressing the diversity of human sexuality. The focus is mainly on sexuality as a synonym for the form of reproduction. The discussion of sexuality issues within the classroom should encompass a more significant number of topics within the content, so that discussion may be deepened and then meet the criteria of building a democratic society. It is hoped that this study will contribute to the demystification of taboos involving human sexuality and that it will help in the preparation of textbooks with a more social perspective on sexuality in order to deconstruct gender biases and sexual orientation.

**Keywords:** Sexuality. Sexual education. Textbook. Biology teaching.

**Resumo:** A restrição da abordagem do tema sexualidade nas escolas e no livro didático pode ser problemática, visto que ao não se debater sobre conteúdos relativos à sexualidade humana, dúvidas importantes sobre a saúde no que diz respeito ao âmbito sexual, podem não ser esclarecidas. Ao não se debater sobre as questões sociais da sexualidade humana, preconceitos e discriminações, contra homossexuais, podem ser gerados. O objetivo desse estudo foi investigar como as duas coleções de livros didáticos de Biologia, mais distribuídas no Brasil, no ano de 2015, pelo PNLD, abordam o tema, além de verificar nas coleções dos mesmos autores no ano de 2018. Foi utilizada a análise de conteúdo para analisar as quatro coleções. Foi verificado que a linguagem presente nos textos dos livros didáticos ainda apresenta um padrão heteronormativo, não abordando a diversidade da sexualidade humana, focando principalmente na sexualidade como sinônimo e forma de reprodução. Assim, a discussão dos temas de sexualidade dentro da sala de aula deveria abranger mais tópicos dentro do conteúdo, a fim de aprofundar a discussão e poder então cumprir o critério de construção de uma sociedade democrática. Espera-se que esse estudo contribua para a desmistificação dos tabus que envolvem a sexualidade humana; bem como que auxilie na elaboração de livros didáticos com um olhar mais social do tema sexualidade, com o intuito de desconstruir preconceitos de gênero e orientação sexual.

**Palavras-chave:** Sexualidade. Educação sexual. Livro didático. Ensino de Biologia.

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**Resumen:** *Restringir el enfoque de la sexualidad en las escuelas y los libros de texto puede ser problemático, ya que la falta de discusión sobre el contenido de la sexualidad humana lleva a importantes preguntas y decisiones sobre la salud sexual. Sin discusión, estas incertidumbres pueden no aclararse. La falta de debate sobre los problemas sociales de la sexualidad humana puede generar prejuicios y discriminación contra los homosexuales. Por lo tanto, el objetivo de este estudio fue investigar cómo las dos colecciones de libros de texto de biología distribuidos en Brasil por Programa Nacional para Livros Textos (PNLD), abordan el tema. Las muestras de 2015 y 2018 se investigaron a través del análisis de contenido para evaluar las cuatro colecciones. Verificamos que el lenguaje presente en los textos de los libros de texto todavía presenta un patrón heteronormativo, no aborda la diversidad de la sexualidad humana. La atención se centra principalmente en la sexualidad como sinónimo de forma de reproducción. La discusión sobre temas de sexualidad dentro del aula debe abarcar una mayor cantidad de temas dentro del contenido, de modo que la discusión pueda profundizarse y luego cumplir con los criterios para construir una sociedad democrática. Se espera que este estudio contribuya a la desmitificación de los tabúes relacionados con la sexualidad humana, y que ayude en la preparación de libros de texto con una perspectiva más social sobre la sexualidad, para deconstruir los prejuicios de género y la orientación sexual.*

**Palabras clave:** *Sexualidad. Educación sexual. Libro de texto. Enseñanza de Biología.*

## Introduction

According to Maia (2010, p. 2), “Sexuality is the name given to human’s life aspect in which we include corporeal and subjective sensations and, also emotional feelings”, that meaning sexuality is not restricted to the sexual activity manifestations but also subjected to the nuances of every individual. In a broad context, sexuality fathoms beyond sexual activity, gender questioning, sexual orientation, reproduction, pleasure, and affection (MAIA, 2010). Sexuality has always congregated polemic by playing with fantasies, even after the sexual revolution promoted by globalization and the media, questions related to sex and sexuality remain taboo (BERALDO, 2003).

In the scholar environment, sexuality is part of the teenager’s lives, who start socialization and body development due to intense hormonal manifestation through this life’s stage. For that reason, reflecting on human sexuality brings a certain “puritanism”, which plasters many discussions about this topic and does not allow to demystify prejudices and stereotypes (SILVA, 2013).

Thinking about the sexuality fathoming taboos, it is primordial that schools be the intermediation in the sense of paradigm-shifting about human sexuality. Silva (2013, p. 19), states that:

[...] it is necessary that the School, through State’s representation, leads the issue and its variants in a way that the innumerable concepts and misconceptions are explained. Doubts about STD’s prevention, taboos about homosexuality, teenage pregnancy, love, passion, knowledge of one’s own body, and the body of the Other are subjects to be explained.

When approached at School by the subjects of Sciences and Biology, sexuality’s topic development is minimal. Most of the time, sexuality knowledge is confined and restricted to Biology in terms of reproduction, hormonal changes, and STDs (sexually transmitted diseases), which means strict related to humans Biology. Notwithstanding this condition, the biological knowledge is insufficient to the broadness of the theme and individual

comprehension, being fundamental, in this case, rendering about other aspects of the matter, like emotional, socio-cultural, and historical applications (RIBEIRO; RENNES, 1990). After all, experiencing sexuality surpasses sexual relations and reproduction, carrying along with affection, love, intimacy, and respect to the body and life (SOUZA; COAN, 2013).

## Sexuality and Society

For this study's fulfillment, we should consider human's sexuality background as: "The exercise of human sexuality understood as part of human completion includes concepts such as affection, pleasure, dialogues, the autonomy of decision, and respect. Those concepts have to be constructed as a fundamental right" (DINIZ; PEREIRA, 2009, p. 227).

Apart from that, Louro (2000, p. 9) guides this article by affirming "[...] we can understand that sexuality involves rituals, languages, fantasies, representations, symbols, conventions... Profoundly cultural and plural processes".

Cano, Ferriani and Gomes (2000) place a little warning to the construction of the taboos that involve human sexuality history. They assert that the society has organized on assumptions and conventions of the "traditional" familiar structure (mother, father, and children), wherein such a patriarchal system, and Christian religious conception invigorated vigorously, and sex became underpinned by procreation. Myths and taboos about masturbation and homosexuality, for example, started being depicted as sin, promiscuity, and reason for shame (CANO; FERRIANI; GOMES, 2000).

Macedo *et al.* (2013, p. 106) show that sexuality-related taboos might originate in the familial background, fomented by the parents: "[...] the shame factor is the significant inhibitor of dialogue with the family, inferring us to think about relationships between parents and their children and the restrictions on some subjects, such as sexuality itself".

To Cano, Ferriani and Gomes (2000, p. 21): "Children sexuality brings out, to many parents, repressed aspects of their sexuality". When speaking about sexuality and gender, it is essential to dissociate those two concepts that are usually treated as complementary or intrinsically linked, although the understanding of the distinction between the two topics is also highlighted.

Two divergent perspectives assert the discrepancy between gender and sexuality through gender-detached sexuality, breaking the reductionist arguments that link them, and others that show gender possibilities that are not predetermined by predominant heterosexuality (BUTLER, 2016). Hence, it is understood that gender and sexuality are intrinsically independent themes and, therefore, should be treated with that distinction. This treatment aims to reduce prejudice and improve the understanding of the various strands of sexuality and the concept of gender. It is also necessary to understand how their regulations can generate those prejudices and taboos within society. These, which permeate the discussion of human sexuality, prevent substantial uncertainties about respect for diversity and human health from being clarified. From issues that address the experience of sexual

practice to the matter of deconstruction of prejudice and respect for sexual and gender diversity.

In this sense, schools must come to repair and remedy the socially constructed taboos that are reverberated in the familiar environment. The existence of themes that deal with gender and sexuality in textbooks can open space for their approach, broadening the discussion within the school environment and thus helping the deconstruction of such taboos.

## Sexuality in School

For Macedo *et al.* (2013), the approach to sexuality must happen in the school ambient because it reveals a social trajectory that goes beyond the space of the individual self. Imperatori *et al.* (2008) state that sexuality is expressed through various ways in schools, and it is up to the school institution to expand the cognition about sexuality.

Despite the concepts presented in this paper, to define sexuality, it is essential to always take into consideration the sociocultural and subjective issues that permeate the theme. The knowledge passed in the scholar environment seems to be restricted to the most biological questions of the subject, as stated by Imperatori *et al.* (2008, p. 2): “[...] it’s noteworthy that it is not evident that the diversity of sexual orientation and gender are operated in the academic formation, which seems to establish a continuity between the reflection of sexuality and reproduction”.

Teixeira, Araújo and Souza (2017) also reinforce what Imperatori *et al.* (2008) say, stating that efforts performed to the teaching of Sexual Education in Basic Education are influenced by the “biologicist conception”, that is, a technical and deterministic view of specific subjects of the Biological Sciences. This happens despite the awareness that there are aspects of Humanities and Social Sciences when dealing with human sexuality.

The School presents an essential role in the development of adolescents when treating complex themes, as shown by Beraldo (2003). The author points out that the School is an environment of interaction with the world, in addition to the familiar environment. It is in the School that complex topics are addressed, considering the emotional and affective formation of students.

Thus, it is important to deconstruct the view that biology alone is sufficient to explain subjective issues of human sexuality, being necessary the incorporation of the social vision to treat about the purport of human sexuality.

The textbooks are a tool used by teachers within and outside the classroom. Teachers extend their use in class preparation as a content guide. Textbooks are also used in planning the school year and in the development of homework and questionnaires (BITTENCOURT, 1993). Therefore, the textbook is an auxiliary aid base of importance to teachers. Thus, the textbook must contain texts that address the topics that need to be worked within the classroom, such as sexuality.

## Sexuality in Textbooks

For Cassab and Martins (2003), the textbook is a valuable resource to aid in the pedagogical practice of teachers of basic education. Based on that presupposition, it is important to emphasize what Souza and Coan (2013, p. 2) state about Biology textbooks: “The content of sexuality in textbooks in the present day cannot offer space to feed taboos and sexual myths”.

Gonçalves *et al.* (2013) analyzed 41 textbooks from different disciplines, including biology, dealing with sexuality. They found that in 39% of the examined books, the theme was not addressed at any time. This demonstrates how the issue is not well represented in the school reality of Brazilian students. Gonçalves *et al.* (2013) show that even with the arguments brought by both authors who make the correlations between the political context, feminist struggles, and social movements as well as the official documents of Brazilian education, textbooks still addressing sexuality in a non-reflexive way, or not approaching it at all.

In a more recent study, Salton (2016) shows that the approach of human sexuality through a strictly biological bias is not only restricted to the teaching practice in the school environment but also presented in textbooks. The author concludes by stating that it is not necessarily to deny the biological knowledge in textbooks, but it should also consider the historical and sociocultural approach in addressing issues such as gender, for example.

When dealing with the issue of gender, Martins and Hoffmann (2007) demonstrated that in textbooks, the gender roles unequally. The male protagonist is highlighted on the detriment of the female gender, assuming that the later has a secondary role in society. The authors state that in a continually changing society (considering social, sexual, and gender diversity), there is no room for steady roles that translate a hegemonic power of a social group. Regarding this last statement by Martins and Hoffmann (2007) about social purposes, the textbooks should then adapt to this sociocultural transformation. Thus, the language that is always focused on what is considered “normal” (heterosexual), or concentrate in the male gender, refers to the reaffirmation of the heteronormativity of the language of textbooks, leading to the control of gender and sexuality, bringing the two correlated concepts.

According to Anjos (2013, p. 14):

heteronormativity can be understood as a set of norms and regulations of the ways of being and living bodily desires and sexuality. The perspective of heteronormativity orbits around biologicistic and deterministic discourses, where there is only one binary way of being and living, feminine/female or masculine/male, and where one can be interested only in the opposite sex.

This language, then, refers to the opposite idea of the role of the textbook within the classroom. In addressing sexuality, bringing less diversity and more propensity to propagate ideas of abnormality to anything beyond the heterosexual pattern can make it challenging to address diversity, respect, and tolerance.

Regarding contexts of human sexuality approaching social aspects, such as family planning and teenage pregnancy, Altmann (2001) emphasizes the significance of including such themes in the textbooks, considering the concern books have in guiding contents within the classroom.

## The National Program for Textbooks and Teaching Material

Textbooks are made available to public schools in Brazil by the National Program for Textbooks (*Programa Nacional do Livro e do Material Didático* - PNLD). It was created in 1985 and is considered an important step for Brazilian education regarding the systematic and free distribution of textbooks to most public elementary schools in the country. Starting in 2003, the program also began distribution of textbooks to High School, and in the year of 2007, the distribution of Biology books was included. Currently, Brazilian public schools receive books from all the Basic Education curriculum components, through the PNLD (BRASIL, 2011).

Before arriving at the schools, the books are analyzed by experts who then compile a list that will compose the textbook guide. This guide is then made available to the schools of Basic Education, which have a period of time to choose the set they find most suited to the school. Books are replaced every three years, and this is the period of a new process of choosing the textbooks. The placement of sets used to be made by experts. However, thanks to Article 18 of the Decreto 9099/2017 (BRASIL, 2017), this is no longer an exclusive competence, being open to each school, group of schools, or even all public schools included in the system. The guide provides the didactic sets approved in the evaluation process, and it is available to the teachers of public schools to attend pedagogical characteristics of each one of the schools. In addition, the evaluation sheets containing the criteria used in the first evaluation are available in the guide (BRASIL, 2014).

The 2015 PNLD guide of Biology presented as one of its evaluative criteria during textbook analysis:

The textbook contributes so that biological knowledge is used to recognize forms of racial, social, and gender discrimination, as well as the formation of attitudes, postures, and values that educate citizens in the ethnic-racial context for the construction of a democratic society (BRASIL, 2014, p. 12).

Therefore, according to these criteria, to be approved, the textbook has to stimulate reflection on social themes that concern human diversity, on a social, gender, or racial context. As stated by Borrillo (2000) it is in the school, through pedagogical instruments such as the textbook, that students come in contact with concepts and questions that shape the world as it is, and can interpret it, aiming at valuing ethical principles such as respect for diversity and non-discrimination, promoting tolerance and respect.

Besides the textbook, which is familiar to the student and the teacher, the book of the later has a manual. The teacher's manual contains several functions, including helping the teacher through the use of the textbook, as well as their lesson planning process. This manual

also goes through expert evaluation, who following some criteria check if the manual: “provides theoretical and methodological possibilities that favor the teaching-learning process, emancipatory (non-excluding) educational process, and the recognition of forms of racial, social, and gender discrimination and how it may be favored” (BRASIL, 2014, p. 12).

According to the 2015 PNLD Biology Guide, the approved books must “overcome the centrality of the biological bias” (BRASIL, 2014, p. 24) and promote practices that combat violence and prejudice: “[...] confrontation of violence, prejudice, and discrimination of sexualities, materialized in sexist, homophobic, transphobic, lesbophobic practices that are presented today and in the daily lives of classrooms, school, of the community” (BRASIL, 2014, p. 24).

Nine different sets were made available in the 2015 PNLD Biology Guide, for teacher’s selection and later delivered to schools. Thanks to this free distribution of textbooks in Brazilian territory, this resource has become quite common in schools and is available for access by students and teachers. It is possible to realize the importance of the textbook as a resource, not only to address human sexuality but also to break the “biologist conception” and contents in addressing issues related to human sexuality that belong exclusively to Biology and make room for content also focused on the Humanities and Social Sciences.

Here we are considering the importance of the school and the textbook in addressing the social themes of human sexuality to reduce prejudice, discrimination and to make future society more equal regarding rights between different groups. Members of minority groups understand the relevance of this study in showing how sexuality is presented in current textbooks distributed by the Brazilian federal government in the year of 2015. So, we are checking the sets of the same authors in 2018 to verifying if there was (or not) any substantial change in the way of dealing with sexuality.

## Methodology

To carry out this research, we selected the two sets of biology textbooks most distributed in Brazil by PNLD in 2015 (Frame 1), based on statistical data provided by the National Fund for the Development of Education (*Fundo Nacional de Desenvolvimento da Educação* - FNDE - [www.fnde.gov.br](http://www.fnde.gov.br)). The choice of the two most distributed PNLD sets in 2015 is because, until the beginning of this research, the list of the most distributed sets by PNLD had not yet been published in 2018. According to the FNDE website, in 2015, a total of 7,563,371 Biology books were distributed, of which 83,519 (27.1%) are from the 2015 set 1 and 537,155 (17.5%) from the 2015 set 2. It is noteworthy that these two sets correspond to 44.6% of the national distribution. Besides, the sets of the same authors were analyzed, but in the editions distributed by the 2018 PNLD (Frame 1). This year, the total number of copies of Biology textbooks that were distributed was 7,946,878, of which 1,588,681 (20%) are from set 1 of 2018 and 1,975,005 (24%) from the set 2 of 2018, 44% of the total distributed. As each set has three volumes, a total of twelve books were analyzed.

**Frame 1.** Book sets selected for the study according to their distribution in DF by PNLD 2015 and 2018.

Selected Sets PNLD	Year
Set 1 – Biology Today, Sérgio Linhares Fernando. 2nd ed. – Sao Paulo: Attica, 2013.	2015
Set 2 – Context Biology, Amabis, José Mariano and Martho, Gilberto Rodrigues. 1st ed. – Sao Paulo: Modern, 2013.	2015
Set 1 – Biology Today, Sérgio Linhares, Fernando Gewandsznajder, Helena Pacca. 3rd ed. – Sao Paulo: Attica, 2016.	2018
Set 2 – Modern Biology, Amabis, José Mariano and Martho, Gilberto Rodrigues. 1st ed. – Sao Paulo: Modern, 2016.	2018

Sources: Brasil (2014; 2017).

The book sets were analyzed using the content analysis methodology proposed by Bardin (1977), using the posterior categorization process, that is, the construction of categories after the analysis of the object of study. For this, the books were read, and only after this previous reading, the categories were determined. Bardin (1977) proposes techniques that allow content analysis, the categorization being used here, the author describes the categorization process as “an operation of classifying constituent elements of a set by differentiation and then by regrouping according to (analogy), with the previously defined criteria” (BARDIN, 1977, p. 147).

After verifying the educational contents present in the textbooks and reading the chapters that brought issues related to sexuality, two categories were created for text analysis of the sets: “Biologist Conception” and “Social Aspects”. For the “Biologist Conception” category, the following themes were considered: menstrual cycle, reproduction, contraceptive methods, and sexually transmitted diseases. For the “Social Aspects” category, they were sexual orientation, gender identity, abortion, and family planning.

According to Furlani (2011), this approach focused on reproduction, gender characterization according to body attributes, and sexually transmitted infections (STIs) is characterized by biological determinism, through a more technical language. This fact justifies the creation of the category “Biologist Conception”, after reading the sets, and the inclusion of these contents to it.

For the “Social Aspects” category, the themes of sexual orientation, gender identity, abortion, and family planning were considered. The themes included in this category - sexual orientation, gender identity, abortion, and family planning - are usually related to the forms of prejudice and, therefore, related to social subjects, unlike the themes categorized as “biologists”, which justifies the creation of this category after reading the sets and inserting these themes in it.

In each of these categories, we analyzed: i) The clarity in language: where it was ascertained if the language used in the texts was clear, easily understood by the student and if



it induced the student to reflection and critical thinking; and, ii) The misconceptions: where it was verified the existence of conceptual errors within the themes.

After categorization, the data were organized by quantifying the number of times the themes of each category were treated in the different texts. Thus, permitting to highlight the results found after the analysis more objectively. In addition to quantifying, the impressions obtained on how each theme was approached were described. We also analyzed the Teacher's Manual found at the end of each textbook. We verified how the orientations are made to the teacher about the approach of the sexuality theme. For this analysis, we made descriptions of how these guidelines are presented.

## Results and discussion

### *Set 1 - Biology Today (2015 and 2018)*

From the results obtained, it can be seen that the themes of the “Biologist Conception” category were more frequent than those of the “Social Aspects” category (Table 1). The themes of this latter category are mentioned once, except in the 2018 PNLD edition, where Sexual Orientation was mentioned twice.

**Table 1.** Frequency of themes analysed in the categories Biologist Conception and Social Aspects, in the sets Biology Today PNLD 2015 and PNLD 2018.

<b>Biologist Conception</b>	<b>PNLD 2015</b>	<b>PNLD 2018</b>
Menstrual Cycle	3 times	3 times
Reproduction	4 times	5 times
Contraceptive Methods	3 times	3 times
Sexually Transmitted Infections	2 times	2 times
<b>Social Aspects</b>	<b>PNLD 2015</b>	<b>PNLD 2018</b>
Sexual Orientation	1 time	2 times
Gender Identity	None	None
Abortion	1 time	1 time
Family Planning	1 time	1 time

Source: Authors data.

In general, the themes examined in the “Biologist conception” category followed a more technical approach pattern, restricting to physiology, talking about reproduction, menstrual cycle, STIs, and contraceptive methods in a more contentious way. However, in the PNLD 2018 edition, there is a counterpoint in the text about reproduction, not necessarily

linking reproduction to the sexual act, but relating this fact to non-heterosexual relationships and heterosexual couples using contraceptive methods, as shown in the following excerpt:

The sexual act, however, does not necessarily involve reproduction. This is explained by the fact that sex also encompasses relationships different from those involving a woman and a man [...] and there are relations between people of different sexes that use some method to prevent reproduction, the contraceptive methods (LINHARES; GEWANDSZNAJDER; PACCA, 2016, p. 164).

Despite the counterpoint mentioned above, concerning the “Social Aspects” category in the sexual orientation theme, none of the sets found a deepening of the theme nor the presentation of new information, restricting itself only to conceptualize the heterosexual-homosexual issue, not mentioning other variations of human sexuality, like bisexuality.

On gender identity, the issue was not addressed in either of the two editions of Set 1. The lack of this approach disagrees with that proposed by PNLD, since according to the PNLD 2015 Biology Guide (BRASIL, 2014), textbooks, to be approved, must provide means for combating sexist and transphobic practices. However, the lack of approach to the subject in the texts of the analyzed books does not make room for the necessary debate recommended by the PNLD.

Regarding the abortion issue, the sets bring the same informative text in the editions distributed in 2015 and 2018, highlighting divergent opinions on the subject, educationally, but without stimulating any student's reflection. Abortion represents a public health problem in Brazil, and according to Temp *et al.* (2013, p. 73):

The Brazilian educational system makes an effort to educate citizens capable of building knowledge that contributes to reducing the number of abortions and their complications, especially among adolescents. Considering this aspect, health education actions, developed in the field of sexuality with this public, are fundamental and contribute to a healthier lifestyle and more conscious decision making.

In this sense, we consider that the excerpt presented fulfills its role in highlighting the divergence of opinions about the content. However, by highlighting these opinions, the sets offer them in an expository way. Though, without guiding the student to any reflection, not awakening in the student, the thinking like a social subject on the theme and its consequences, so as the discussion of its legalization.

No text in either edition of the distributed sets addressed family planning. However, in both sets, paragraphs were dealing with sterilization procedures. The authors called attention to the right of choice and preparation of men and women when they are to give birth to a child. The bias in addressing these themes is limited. Authors restrict approaching Contraceptive Methods, limiting to the biological preference, with no mention of the social issues that accompany family planning. As shown by the publications of Altmann (2001), the neglect of addressing family planning in schools and textbooks can lead to unwanted pregnancies and teenage pregnancies, the latter having a significant impact on school dropout of pregnant students.

The teacher's manual is very good in guiding contents considered in the category “Biologist Conception”. The manual brings articles and references that can help the teacher when approaching the themes. For “Social Aspects” categories themes, the manual encourages debates but does not provide guidance or suggestions on how to do it, evidencing the continuity in taking the “biologist” themes rather than transversal themes (Social Sciences).

In the editions of Set 1, in both analyzed categories, the information and contents were written in an easy-to-understand language. Concerning the arrangement, construction, and deepening of the didactic texts, we observed that the category “Biologist Conception” were descriptive, extensive and deepened in the theme, using Biological Sciences terminology. Though, when the contents were into the “Social Aspects” category, the texts were much smaller, strictly descriptive, without deepening the content. Besides, all contents on “Social Aspects” category, in both sets distributed by PNLD, were always expressed within a box entitled “Biology and Society”. The text did not relate these contents to the one presented in the rest of the chapter.

### *Set 2 - Context Biology (2015) and Modern Biology (2018)*

We analyzed the two sets distributed by PNLD 2015 and 2018 because although they have different names, the same authors wrote them. Just like the previously presented set, the frequency of contents in the “Biologist Conception” category was higher than those arranged in the “Social Aspects” category, as can be seen in Table 2.

**Table 2.** Frequency of themes analyzed in the Biologist Conception and Social Aspects categories, in the Biology in Context PNLD 2015 and Modern Biology PNLD 2018 sets.

<b>Biologist Conception</b>	<b>PNLD 2015</b>	<b>PNLD 2018</b>
Menstrual Cycle	3 times	3 times
Reproduction	9 times	5 times
Contraceptive Methods	2 times	2 times
Sexually Transmitted Infections	1 time	1 time
<b>Social Aspects</b>	<b>PNLD 2015</b>	<b>PNLD 2018</b>
Sexual Orientation	None	1 time
Gender Identity	None	1 time
Abortion	2 times	1 time
Family Planning	1 time	1 time

Source: Authors data.

Nevertheless, we note some interesting points throughout the analysis of these two sets. The first of them deals with the “Biologist Conception” themes, which were solely focused on reproduction and its physiological meaning, always aiming at generating new individuals and perpetuating genes.

Another point worth mentioning is the thematic menstrual cycle. This, for example, has childbirth as the guiding point of the menstrual and hormonal cycle, passing the perception that motherhood is the woman's purpose. This is reinforced when it comes to the issue of reproduction, where it is constantly misused as a synonym for sexuality.

The biological idea that reproduction is one of the pillars that move life and evolution is widespread, a perception that Rohden (2002) and Anjos (2013) also discussed. However, applying this concept to the human being, especially within the school can be a factor that generates discrimination and brings an idea that the role of women in society is restricted to the generation of descendants. This parenting role is also reinforced in the language used by the textbook, especially in describing the sexual organ of men and women, using the word orgasm only for the male description while the female description remains in the reproductive inclination for childbirth, as if pleasure does not belong to the sexual experience of women.

The Sexually Transmitted Infections theme stands out in this set because it is neglected considering its appearance limited to an excerpt in a text on contraceptive methods. The highlight is the lack of access on this topic, as also noticed by Anjos (2013), which raises some concern because one way to prevent the increase of the contagion of STIs is to address the issue within classrooms. This carelessness promotes confusions among students, especially in adolescence where sexuality is brought to light, as the basic STI prevention strategy is through educational measures (MALTA; MARTINS; ALMEIDA, 2013).

The contraceptive theme is still in the “Biologist Conception” category. The books bring a text about male contraceptives, then addressing the balance of responsibility since the vast majority of contraceptive methods are aimed at women. This more female-oriented approach again presents a view of gender inequality, as “responsibility” is driven to one gender only, the feminine.

Strength and domination are characteristics attributed to the male gender and hormonal characteristics are explained to each gender. However, when it comes to the construction of the female gender, there is only association with pregnancy hormones, linking the biological destiny of pregnancy to this gender (ANJOS, 2013). This subtle difference in the texts reinforces the maternal and reproductive role of women and detaches men from this responsibility.

When analyzing the “Social Aspects” category there is a small difference, between the sets distributed by PNL D 2015 and 2018, especially on sexual orientation and gender identity, not addressed at all in the 2015 set, but which appear in the 2018 set (Table 2). However, the theme is still treated more simplistically when compared to the “Biologist Conception” themes and may give the reader the impression that the theme does not require such depth and richness of detail. The “Biologist Conception” themes are still more discussed and worked on large and longer texts when compared to texts classified in the

“Social Aspects” category. The latter when present within the textbooks, have little content, making difficult to have enough material to start discussions within the classrooms.

The language used in biological textbooks contributes to a heteronormativity of sexuality. The abundance of examples and forms associated with heterosexuality regularly evoke the notion of family limited to the traditional sense of father, mother, and children (GONÇALVES; PINTO; BORGES, 2013). This heteronormatization may eventually contribute to homophobia, giving the idea that everything that escapes the “heterosexual pattern” is abnormal. The language used is simplistic and does not suggest reflection within the text itself about all aspects and contexts that sexuality can bring within society, making the teacher responsible for such a task. However, the teacher's manual analyzed in the set does not provide precise guidelines for addressing the theme or directions for stimulating the discussion. This lack of information in the manual ends up leaving the teacher alone to deepen the approach to those issues that are often neglected because the teacher is not regularly prepared in academic life to talk about sexuality, carrying taboos and prejudices that can be perpetuated in school.

The language of the texts, in both categories, was easy for the reader to understand, even though it has several different names, the text has a fluidity that helps the reading without difficulties, although often the language is exceptionally simplistic especially in texts of the “Social Aspects” category. Few conceptual errors were found in the analyzed texts. The most prominent misconceptions were: the book treating testosterone as an exclusively male hormone (being deterministic for the definition of sex in the embryonic phase of human development), which is known not to be so. Another misconception was perceived when treating the IUD as an abortifacient as well as a contraceptive method, which is a misconception because the IUD does not have abortifacient effects, but protection acting as a barrier to prevent fertilization.

Finally, it was found that in both sets analyzed, the texts referring to the themes of the “Social Aspects” category, although present, were presented superficially. Both sets explain the meaning of each theme, without delving into it. The set leaves explicit that there is no consideration to other spectra of human sexuality or even, how affective relationships are more profound than just the objective description that the books propose.

## Final considerations

Textbooks play an essential role in students' educational background because they contain information about the school topics for students and teachers, acting as a guide for addressing the content within the classroom. By inciting reflections and social discussions suggested in textbooks, teachers can decide if they will work or not on the theme and if they will or not discuss it since the students have access to the book distributed in Basic Education.

When thinking about textbooks as a guide for pedagogical practice, the books should contain suggestions on how to approach the sexuality theme within the classroom, helping the

teacher in this task. The book sets present subtle changes between the editions distributed in the 2015 and 2018 PNLDs. It can be verified that the theme of sexuality has been little addressed within the chapters of the analyzed books, demonstrating how sexuality is still scarce in the textbooks requiring the incorporation of the vision of a changing world.

Apprehension occurs when checking the Common National Curriculum Base High School (*Base Nacional Comum Curricular – BNCC*), approved in the year 2018. A quick search for the term sexuality in this document shows that the term is not addressed at any time in the “New High School”. Therefore, it is worth checking whether by the year 2021, when High School Biology textbooks are already adequate to the BNCC-based curriculum, how sexuality will be addressed. It looks like the theme will be less addressed within Biology textbooks, as BNCC makes no mention of sexuality in this segment. This situation may lead to an even more drastic decrease in the possibilities of discussion of such relevant topics within the classroom, further alienating the criterion of forming a democratic society, as suggested by the Brazilian law.

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## Notes

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