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CHAPTER 6

THE PLANNED OBSOLESCENCE OF KNOWLEDGE: THE BENEFITS AND CHALLENGES OF EDUCATION WITH AN EXPIRATION DATE

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ABSTRACT

Planned obsolescence of knowledge refers to the rapid loss of relevance of information and skills due to technological acceleration and the exponential growth of knowledge production. This phenomenon, intensified by the information society and communication technologies, makes the complete assimilation of new content unfeasible. Students face challenges such as the difficulty of identifying reliable sources and the constant pressure to stay current, resulting in a "mental dependency" and the prioritization of quantity and speed over quality. This scenario compromises prolonged attention and depth in learning. Historically, the knowledge acquired remained relevant for decades, but today it becomes obsolete in a few years or months. This affects professionals who depend on specific tools, and may exclude them from the market. In education, there is a need to constantly update curricula, incorporating new skills and emerging technologies. The great challenge is to prepare students to be autonomous learners, capable of exploring knowledge independently and developing a critical sense about the information consumed. Thus, the obsolescence of knowledge reflects a broader trend in contemporary society, requiring constant adaptations in educational practices and in the way we deal with learning.

Keywords: Education. Planned obsolescence. Knowledge. Benefits. Challenges.

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INTRODUCTION

The concept of "planned obsolescence" refers to the practice in which companies deliberately design and manufacture their products in such a way that their durability and functionality are intentionally limited to a predetermined period. This approach historically originated in the United States around the 1930s, at a time when the country was facing severe economic and social problems due to the collapse of the stock market in 1929. This crisis led to widespread unemployment and had financial repercussions in several countries around the world (Magera, 2012).

With technology advancement and the globalization of the economy, planned obsolescence has been employed in a variety of sectors, including fashion, automobiles, home appliances, electronics, education, among others. Companies have started to invest in research and development to create increasingly sophisticated and attractive products for consumers, while ensuring that these products become obsolete in a short period of time. A typical example of obsolescence is wear obsolescence, which occurs when manufacturers design products with components that deteriorate quickly or cannot be replaced, resulting in premature failures and forcing consumers to purchase new products.

The main objective of this article is to investigate the impacts of planned obsolescence in the educational field, highlighting its implications and challenges to promote a more sustainable and effective education.

The relevance of this study lies in its theoretical and practical contributions. Theoretically, the research seeks to broaden the understanding of how planned obsolescence impacts not only economic sectors, but also education, an essential field for social and human development. Practically, the work aims to identify the effects of this practice on the continuing education of teachers, on the didactic materials and on the validity of the knowledge transmitted, in addition to verifying possible solutions that can mitigate the negative impacts of this practice in the educational context. Thus, the study contributes to the debate on the sustainability and quality of education in a world increasingly influenced by accelerated consumption practices.

This article is divided into three stages: first, it discusses the origin of planned obsolescence; in the second stage, it analyzes its use in education, focusing on the continuing education of teachers, in textbooks and how this practice affects the validity of knowledge; Finally, it presents the benefits and current solutions to remedy the negative consequences arising from planned obsolescence in education.

THEORETICAL FRAMEWORK

PLANNED OBSOLESCENCE

The conception of planned obsolescence, originally, is by Bernard London, an American investor in the construction area. In 1932, he produced a 20-page pamphlet called "Ending the Depression Through Planned Obsolescence", suggesting that the American government encourage companies to limit the shelf life of their products to increase the frequency of the buying and selling cycle. According to London's ideas, products would be sold with a fixed expiration date. In this way, when the product's useful life ended, the customer would return the product to the government and receive a coupon with express value to purchase another product (Slade, 2006).

This conception has invaded all areas and modalities of products and services. According to Packard (1960), there are approximately six types of planned obsolescence: wear, functional, incompatibility or quality, style (desirability) and psychological. The definition of each of these six types of planned obsolescence is:

a) Wear obsolescence: In this type, manufacturers deliberately design products with components that deteriorate quickly or cannot be replaced. This can lead to premature product failure, forcing the consumer to purchase a new one. Ex: fabrics, tires, batteries

b) Function obsolescence: Here, manufacturers release software updates that make products older, slower, less secure, or less compatible with new systems. This can make consumers feel the need to buy a newer model for better performance. Ex. software, smartphones, computers.

c) Incompatibility or quality obsolescence: In this case, manufacturers design products to be incompatible with accessories or spare parts available on the market, forcing consumers to buy newer models that are compatible. Ex: vehicles, appliances, electrical outlets.

d) Obsolescence by style or desirability: This form of obsolescence occurs when products become outdated due to changes in design or style trends. Manufacturers release new versions with cosmetic upgrades to promote consumers to upgrade their products. Ex: fashion, smartphones, furniture.

e) Psychological obsolescence: That is a more current term. Here, manufacturers use marketing strategies to convince consumers that their current products are outdated, even if they are still in good condition. This can make consumers feel pressured to buy a newer product to feel up-to-date (Andrade; Santiago, 2016). Ex. cosmetics, cars, smartphones.

It is highlighted that (Ehlgen et al., 2022) that the European Commission has recently proposed a set of measures that call for more transparency on the part of companies regarding the durability and repairability of their products, as well as the promotion of practices that encourage sustainable production and consumption.

Then the planned obsolescence in education, through the continuous training of teachers and the updating of textbooks.

CONTINUING EDUCATION OF TEACHERS

In Brazil, the concern with continuing education arose, historically, around the 1960s, gaining greater prominence with the enactment of the first Law of Guidelines and Bases of National Education (Brasil, 1961).

Continuing education is essential to guide and improve the pedagogical practice of teachers. In the school environment, this process promotes dialogue and the exchange of experiences, contributing to the construction of knowledge and professional development, being positioned as an exercise of critical reflection on practices, aiming at the reconstruction of personal and professional identity. Teaching work is permeated by experiences, concerns, and new demands, facing challenges such as excessive bureaucracy, pressure for goals, and difficulties in relationships with students, in addition to seeking to make learning meaningful and engaging for them (Cruz, 2019).

In Brazil, teaching practice faces numerous daily challenges, such as excessive bureaucracy, pressure for goals, difficulties in the relationship with students, and failures in public policies. These obstacles, added to the constant new demands imposed on teachers, make the theoretical foundation and critical reflection essential to improve pedagogical practice. The struggle for teacher valorization refers to the process of massification of public schools, which intensified and made the work of teachers more precarious.

According to Monteiro (2019), many teachers report the complexity of the classroom, especially in the face of the transfer, by many parents, of the responsibility of educating their children to school. This situation is even more challenging for beginning teachers, who often face difficulties, feel unmotivated and undervalued. They highlight the need for training that goes beyond theories disconnected from reality, prioritizing practical learning and aligned with the context of action (Monteiro, 2020).

Added to this situation is the unvalued salary floor, the high workload and the accumulation of schools in which teachers work, all of which contribute to the precariousness of teaching work and hinder access to continuing education, highlighting the absence of a comprehensive public policy that integrates the valorization of education

professionals, allowing guarantees and decent working conditions, this includes career plans and salaries based on salary values, the national level (Araújo; Silva; Silva, 2019).

UPDATING OF TEXTBOOKS

In Brazil, textbooks are updated every four years through the National Book and Didactic Material Program (PNLD) (Moderna, 2024). This program, implemented in the country, is responsible for evaluating, acquiring and distributing educational materials to public basic education schools throughout the national territory. Periodic updates aim to ensure that these resources are aligned with curriculum guidelines and the contemporary educational needs of students. Given the rapid evolution of knowledge and technology, it is necessary for textbooks to reflect social, scientific and cultural changes.

The National Textbook Program (PNLD) (Brazil, 2020), responsible for ensuring the updating of textbooks, follows the following steps:

a) Publication of criteria: The Ministry of Education (MEC) publishes the mandatory criteria for each stage of education.
b) Evaluation and selection: MEC specialists evaluate and select the works that meet the required criteria.
c) Consultation of schools: The list of approved works is available for schools and teachers to choose which ones to adopt.
d) Distribution of books: The National Fund for the Development of Education (FNDE) (Brazil, 2020) distributes textbooks to schools.
e) Schools must present two book options for each year and subject. The choice is made in the year prior to the delivery of the books, and the FNDE distributes the books within the number of students informed in the School Census.

The Ministry of Education (MEC) (Brasil, 2020), plays a key role in this process, reviewing and approving the textbooks to be used in public schools. This updating process not only seeks to modernize the content, but also to make it more inclusive and representative of Brazil's cultural diversity.

As seen, schools must present two book options for each year and subject, the choice is made in the year prior to the delivery of the books and the FNDE distributes the books within the number of students informed in the School Census.

METHODOLOGY

Methodology refers to the path used to achieve a result and the set of tools used to achieve final knowledge (Andrade, 2010). The research is classified as exploratory-explanatory, considering that, initially, information on the topic was gathered, followed by the analysis of these data and the identification of the causes of a specific phenomenon (Severino, 2017).

In terms of methods, it is a bibliographic research. The present work focused on the review of articles, leaflets, official documentaries and books, with the objective of presenting the ideas of researchers dedicated to the theme. Google Scholar was used mainly due to its ease of use and speed of obtaining information, along with the SciELO digital library.

The approach employed is classified as qualitative. According to Zanella (2006), this approach seeks to structure, collect and analyze data based on the available information. Initially, a review of the academic literature on the chosen topic was carried out. To ensure the reliability and validity of this work, several sources were compared in a process called "Triangulation". According to Denzin and Lincoln (Denzin, 2023), this involves analyzing multiple perspectives to increase the credibility of the results.

RESULTS AND DISCUSSIONS

PLANNED OBSOLESCENCE AND EDUCATION

Planned obsolescence manifests itself in education, through the rapid evolution of technologies. Educational books, platforms, software, and devices used in learning environments undergo constant updates, often making books and tools quickly obsolete. This practice impacts both educational institutions and teachers and students themselves, who need to continuously adapt to new requirements.

Functional obsolescence is an example in this context in education, as educational software and online learning platforms often receive updates that make old versions slower or incompatible with new systems. This forces institutions to acquire licenses for new versions and compatible equipment in order to ensure the proper functioning of the learning environment (Packard, 1960).

In addition, psychological obsolescence also occurs in various situations, such as the pressure to adopt the latest technologies, even when previous versions still meet educational needs. Marketing strategies and the constant promotion of innovations can lead schools and universities to feel outdated in the face of new technological tools that may not be aligned with their real needs (Andrade, 2016).

This rapid technological evolution can strain institutional budgets and create barriers for low-income students who lack access to the latest technologies, thereby increasing inequalities in access to education. In this sense, planned obsolescence promotes a constant dependence on updates and acquisitions, directly impacting the educational environment.

IMPACT ON CONTINUING TEACHER TRAINING

Initial and continuing teacher training (Pereira; Pear tree; Santos, 2021) can be significantly impacted by planned obsolescence, especially due to rapid technological advances. The knowledge acquired during teacher training, along with the tools and methodologies taught, can quickly become obsolete, requiring teachers to continuously update their skills to keep up with new educational demands. This continuous adaptation, however, is a positive aspect, as it promotes constant professional growth and ensures that teachers are prepared to deal with evolving learning environments.

This phase of updates in teacher education is referred to as functional obsolescence, occurring when teacher training curricula include educational technologies that are quickly replaced by new tools, software, or platforms. What is taught today about remote teaching, for example, may become obsolete in a short time.

In a few years, as new technological solutions emerge and become standard in classrooms. This can put newly graduated teachers at a disadvantage, forcing them to seek additional training to stay up-to-date with innovations.

Another significant impact is psychological obsolescence, where the constant introduction of new technologies into educational environments creates pressure on teachers, leading them to believe that their practices and knowledge are outdated, even if they are still effective. This results in a race to incorporate the latest digital tools into teaching, regardless of their actual pedagogical value.

A typical example of this is teacher training curricula that focus on technologies, such as online teaching platforms, which can be replaced by more modern solutions in a few years. This rapid obsolescence not only requires teachers to constantly update their skills, but also impacts the structure of teacher training programs, which need to frequently review their content to keep up with technological changes.

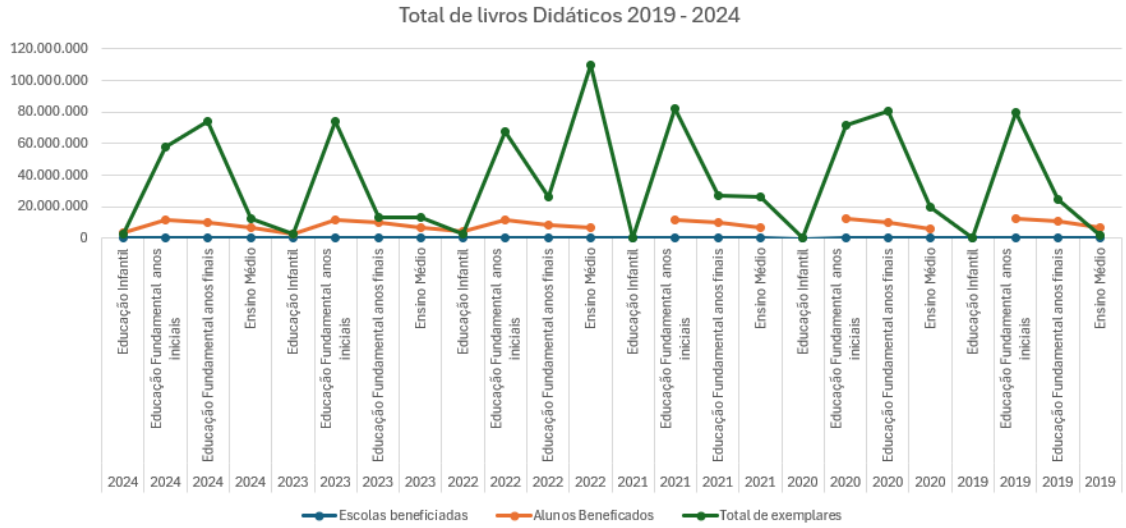
IMPACT ON UPDATING TEXTBOOKS

In recent decades, Brazil has invested in initiatives to make textbooks more accessible and interactive, incorporating digital resources that complement traditional

learning. The inclusion of digital platforms and educational apps has become a growing trend, allowing students to access multimedia content that aims to enrich the learning experience. In this way, aiming to promote literacy, preparing students for an increasingly connected and technological world. This integrated approach seeks to engage students more effectively while promoting emotional, critical, and empathetic development.

In addition, the updating of printed textbooks, being expressed in numbers, has significant values by the federal government year after year, as indicated by data in Figure 1 in the last six years.

Figure 1. Published Textbooks



Source: BRAZIL, 2024

However, the upgrade process faces significant challenges, such as the need for adequate funding and resistance to change by some sectors. The logistics of distributing new materials to all regions of the country also presents an obstacle, especially in remote areas. In addition, it is essential to ensure that teachers receive the appropriate training to use these new resources effectively. Despite these challenges, updating textbooks offers a valuable opportunity to improve the quality of education in Brazil, promoting more dynamic and relevant teaching for new generations.

CHALLENGES FOR EDUCATORS AND EDUCATIONAL POLICIES

Addressing obsolescence in the Brazilian educational context requires a joint effort between educators and policymakers to ensure that the education system is dynamic, inclusive, and prepared for the challenges of the twenty-first century. Among these needs, six main items stand out: continuous updating of knowledge, integration of technologies,

adaptation to new methodologies, management of diverse classrooms, and pressure for results.

With regard to the challenge imposed by educational policies, it is necessary to invest in the entire educational infrastructure, requiring a robust logistical structure for Brazil to maintain solid educational policies (Imbernón, 2011). These policies include:

a) Continuing Professional Development: Education policies should ensure that teachers have access to ongoing professional development programs, making them more effective in their roles.
b) Technological Infrastructure: Investment in technological infrastructure in schools is essential for teachers to effectively integrate new technologies into their pedagogical practices.
c) Flexible and Up-to-Date Curriculum: Policies should promote flexible curricula that can be quickly updated to reflect changes in knowledge and labor market demands.
d) Equity in Access to Education: Ensuring that all students, regardless of their location or socioeconomic status, have access to quality education that prepares them for the future.
e) Supporting Educational Innovation: Policies should encourage innovation in teaching and learning practices, allowing educators to experiment with new pedagogical approaches.

Brazilian educational policies aimed at teacher training have focused on addressing the challenges of modernization and inclusion in the education system. In recent years, initiatives such as the National Plan for the Training of Basic Education Teachers (Parfor, 2024) and the Institutional Program for Teaching Initiation Scholarships (PIBID) have sought to improve teacher qualifications, promote continuous professional development, and encourage innovative teaching practices.

However, the implementation of these policies faces significant obstacles, such as inequality in access to resources in different regions of the country and the need for greater investment in technological infrastructure and updated teaching methodologies.

In addition, teacher training still needs to be more aligned with contemporary demands, such as digital inclusion and education for diversity, to ensure that educators are prepared to deal with the complexities of modern school environments. While existing policies represent important steps, there is an ongoing need for evaluation and adaptation to ensure that all teachers are equipped with the tools and support they need to deliver a high-quality education.

To mitigate planned obsolescence in education, both government and private initiatives have fundamental roles. On the government side, programs aim to integrate digital technologies in schools, ensuring that students and teachers have access to modern and up-to-date tools. In addition, continuous professional development policies for educators are implemented to ensure that teachers remain up-to-date with the latest educational methodologies and technologies.

In the private sector, technology companies and non-profit organizations have collaborated with schools to provide digital educational resources, online learning platforms, and specialized training for teachers.

These partnerships often result in more dynamic and adaptable curricula, which can be quickly updated to reflect changes in knowledge and labor market demands. Together, these initiatives seek to create a resilient educational ecosystem capable of continuously evolving and preparing students for the challenges of this century. In addition, this collaboration between institutions and other educational sectors allows the exchange of experiences and innovations, greatly enriching the teaching-learning process.

STUDIES, SOLUTIONS AND PRACTICAL EXAMPLES

A notable case study on how to address planned obsolescence in education in Brazil is the partnership between the government of the state of São Paulo and the Lemann Foundation (2024), a private non-profit organization. Together, they implemented the "Connected School" program, which aims to integrate cutting-edge technologies into classrooms and empower teachers to use them effectively. This initiative not only provided technological infrastructure, such as computers and high-speed internet access, but also developed a robust professional development program for educators, focusing on active teaching methodologies and the use of digital tools.

As a result, participating schools reported significant improvements in student engagement and teaching effectiveness, demonstrating that collaboration between the public and private sectors can be an effective strategy to combat planned obsolescence. This case highlights the importance of an integrated approach, where technological upgrades are accompanied by ongoing support for educators' professional development, ensuring that innovations are sustainable and impactful in the long term.

To address the planned obsolescence in teacher training, both government and private initiatives have proposed innovative solutions aimed at the effective integration between technology and pedagogy. Governments, such as Brazil's, have invested in continuous professional development programs that use digital platforms to offer up-to-date

and accessible courses to teachers across the country, regardless of their geographic location. These platforms allow educators to access up-to-date content and participate in communities of practice, where they can exchange experiences and learn from their peers. An example of this platform is the Virtual Learning Environment of the Ministry of Education - AVAMEC (Brazil, 2024).

In the private sector, educational technology companies have been developing adaptive teaching tools and personalized learning resources, helping teachers stay up-to-date with the latest educational and technological trends. In addition, public-private partnerships have been instrumental in creating educational innovation labs, where teachers can experiment with new methodologies and technologies in a controlled and collaborative environment. By combining resources and expertise from both sectors, these initiatives offer a promising path to ensure that teacher education evolves in line with the demands of the 21st century.

CONCLUSION

Planned obsolescence is a practice where companies design products to become obsolete after a specific period, encouraging continued consumption. It originated in the United States during the 1930s, as a response to the economic crisis of 1929, with the aim of stimulating the economy by increasing consumer demand. Examples of this practice include products such as televisions, tires, and batteries, which are designed to wear out quickly. There are different types of planned obsolescence, such as wear and tear, functional, mismatch, style, and psychological obsolescence, each affecting the durability and relevance of products in different ways.

Following the main objective that guided this article, the impacts of planned obsolescence in the educational field were investigated. Based on the results presented, it is concluded that planned obsolescence directly affects the quality and accessibility of education, contributing to inequality in access to education.

Planned obsolescence in education is manifested through the rapid evolution of educational technologies and materials, such as textbooks, software, and learning platforms in the continuing education of teachers, which often become outdated. This forces institutions, professors, and students to constantly adapt to new didactic and technological demands. Functional obsolescence is common, with software updates making previous versions incompatible, requiring new investments. In addition, psychological obsolescence puts pressure on institutions to adopt the latest technologies, even when older versions are still effective, impacting budgets and exacerbating inequalities in access to education.

As education is a factor of great importance in the development of society, by promoting a critical reflection on the sustainability and efficiency of educational systems in a context of rapid technological evolution, the study highlights the importance of public policies that encourage more sustainable and accessible practices in education, reducing the negative impacts of planned obsolescence. The study also reinforces, for schools, the need to develop pedagogical strategies and curricula that prioritize flexibility and adaptability, empowering teachers and students for constant change, while seeking to develop critical thinking about the information consumed.

Thus, the future of teacher education in the context of planned obsolescence requires a dynamic and adaptive approach, where continuous education and curricular flexibility become essential. As technologies evolve rapidly, teacher education programs must integrate not only the use of new tools, but also develop critical and adaptive skills in educators, empowering them to cope with constant change. This implies a renewed commitment to continuous professional development, in which teachers are encouraged to participate in communities of practice and to collaborate in innovative learning environments.

However, this research has some limitations. First, the study focused mainly on continuing teacher training and educational materials, failing to explore in depth other aspects of education impacted by planned obsolescence, such as school infrastructure and access to technologies in less favored regions. In addition, the analysis was based on a theoretical review, which limits the practical application of the results. It is recommended that future research carry out empirical studies, involving interviews with teachers and educational managers, to better understand the challenges faced in everyday life. It would also be relevant to investigate how different countries and cultural contexts deal with planned obsolescence in education, in order to identify innovative and adaptable solutions.

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