

Health education as a research field in science education: reflections, challenges, and potentialities

ABSTRACT

This text, through a theoretical essay, highlights the challenges and possibilities of Health Education as a field of investigation within Science Education. It emphasizes the need to overcome normative, preventive, and behaviorist approaches that predominate in school practices and academic research. It reflects on the evolution of this research field, stressing the need to integrate scientific, technological, media, and health literacy. These approaches aim to develop critical and reflective citizens, capable of interpreting scientific information and combating misinformation, thereby promoting ethical decision-making in health. Furthermore, it highlights the growing relevance of Health Education in scientific events and academic publications, evidencing advances in pedagogical conceptions that value reflection and critical thinking. Global health and planetary health are considered emerging themes for debate within the field. Finally, the text proposes the consolidation of this field of investigation through interdisciplinary collaborations and public policies, aiming to improve teacher education and pedagogical practices in health education within science teaching, as well as to play a fundamental role in valuing science, promoting health, and addressing contemporary challenges.

KEYWORDS: Science Education; Health Education; Research Field

Educação em saúde como campo de pesquisa na educação em ciências: reflexões, desafios e potencialidades

RESUMO

O texto, por meio de um ensaio teórico, destaca os desafios e possibilidades da Educação em Saúde enquanto campo de investigação da Educação em Ciências. Ressalta-se a necessidade de superar abordagens normativas, preventivas e comportamentalistas, predominantes nas práticas escolares e pesquisa acadêmicas. Reflete-se sobre a evolução desse campo de pesquisa, enfatizando a necessidade de integrar alfabetização científica, tecnológica, midiática e em saúde. Abordagens que visam formar cidadãos críticos e reflexivos, capazes de interpretar informações científicas e combater a desinformação, promovendo decisões éticas em saúde. Além disso, destaca-se a crescente relevância da Educação em Saúde nos eventos científicos e publicações acadêmicas, evidenciando avanços nas concepções pedagógicas que valorizam a reflexão e a criticidade. Saúde global e saúde planetária são considerados temas emergentes para o debate no campo. Por fim, propõe-se a consolidação desse campo de investigação por meio de colaborações interdisciplinares e políticas públicas, visando aprimorar a formação docente e as práticas pedagógicas na educação em saúde no ensino das ciências, além de desempenhar um papel fundamental na valorização da ciência, na promoção da saúde e no enfrentamento de desafios contemporâneos.

PALAVRAS-CHAVE: Ensino de Ciências; Educação em Saúde; Campo de Pesquisa.

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INTRODUCTION

Figure 1

"In Memory" Monument of the Dachau Concentration Camp – German.



Source: Personal archive of the first author, 2017. For accessibility purposes: the image depicts the "In Memory" Monument, which consists of a concrete block with a glass top honoring the victims of the Holocaust. Behind the block, there is a stone wall with inscriptions highlighted in several languages, such as German, Russian, English, and Polish, bearing the phrases "Never Again" or "Never More", in reference to the German historical movement "Do not forget and learn", which emphasizes the need to remember the Holocaust as a crime against humanity.

When considering the field of biological and medical sciences, we cannot deny the scientific and technological advances in the health area that have contributed to improvements in quality of life and increased life expectancy. Although many citizens may not realize it, throughout history we have observed significant advances, such as vaccines against Smallpox, Poliomyelitis, Measles, HPV, and Hepatitis, which have transformed our realities, particularly by reducing infant mortality. However, the current generation, vaccinated and benefiting from the quality of life resulting from historical scientific achievements, seems to ignore its own history (Ramos et al., 2023).

It is within this context of advances in allopathy—where knowledge is constructed and medications with proven efficacy are developed—that defenses of treatments based on homeopathy emerge, which are nothing more than pseudosciences. Practices such as homeopathy, family constellations, laying on of hands, among others grounded in pseudoscience, are concerning, especially when they expand within Brazil's Unified Health System (SUS), whose objective is to provide free and democratic access to healthcare for all citizens, based on science (Venturi, 2022). However, homeopathy, chromotherapy, acupuncture, among many other strategies classified as Integrative and Complementary Practices (ICPs), are included in the SUS and funded with public resources, despite lacking scientific support (Venturi, 2022).

It was in order to reclaim the importance of historical memory—of the world wars and of the scientific and anti-scientific conflicts in favor of health—that we

began this text with an image (Figure 1) of the Dachau concentration camp in Germany. A place visited by the first author, which evokes memories of a regrettable period in world history. Upon entering the space that has become a museum, the phrase “Arbeit macht frei” (“Work sets you free” in German) presents the ideological slogan of the Nazi far-right campaign in Germany; it is the memory of the Holocaust that once existed and that does not wish to be forgotten. “Do not forget and learn”—this is the main lesson of a visit to that concentration camp, in which historical memory, education, and reconciliation are important principles for a present and a future that do not allow the mistakes of the past¹.

However, this is not a reality observed in relation to health-related issues, especially with regard to vaccination (Tavares, 2023). Vaccine hesitancy and vaccine amnesia (Tavares, 2023), as well as the various forms of health-related amnesia, need to be addressed through scientific evidence, dialogue between forms of knowledge, history of science, and education—that is, Health Education. Just as the Holocaust is sometimes questioned by denialists, scientific advances in health are also undermined by denialism and misinformation that must be confronted through teaching and learning processes in schools—particularly through historical education in the case of the Holocaust, and through health and science education in the case of health.

Health Education within Science Education is a complex field in which academic and scientific research from science education, educational sciences, public and collective health, and medical sciences converge; therefore, it is configured as a field that carries historical, theoretical, and epistemological legacies from distinct areas, which are sometimes divergent in their foundations. When we speak of Health Education within Science Education, we refer to a specific locus of practices and research: the school.

However, other real-life and community contexts intertwine issues related to individual and collective health. In these contexts, health topics are inevitably and unfortunately immersed in misinformation that denies science, creates conspiracy theories, and adopts alternative therapies and pseudosciences, as mentioned in the case of homeopathy or vaccination. Fake news, beyond being merely erroneous dissemination, has neoliberal mercantilist objectives aimed at mass manipulation of the population, grounded in ideological and political principles of national and global elite groups (Bruno & Roque, 2019; Martins & Venturi, 2023).

It is essential that we seek to overcome a salvationist and deterministic view of science (Auler & Delizoicov, 2001); however, with advances in communication and interaction through media and social networks, we must discuss aspects involving pseudoscience, anti-science, and denialist movements. Likewise, as a society, we need to recognize that if public health has improved, as has life expectancy, these are achievements of science. Therefore, we must understand science—and critically reflect on science and on the practice of doing science. This does not mean abandoning popular and traditional knowledge, but rather placing science in dialogue and as a possibility for understanding the world.

To this end, discussions on Health Education within Science Education have constituted promising pathways. Health Education has been consolidating itself as a field of research and practice within Science Education, despite its strong connection to the field of public health. Discussions on its nature, foundations, and

methodologies for the school context have become a scientific agenda (Venturi & Mohr, 2011) within educational sciences and teaching. This is evidenced by the productivity in the field, with studies published in leading journals in science education, as well as by the establishment of a specific thematic line, since 1999, at the main event in the field, the Encontro Nacional de Pesquisa em Educação em Ciências (ENPEC) (Venturi & Mohr, 2011).

Venturi and Iared (2022), based on research in the field of science education, argue that a critical perspective has emerged regarding health education activities, or health-related actions in schools, allowing for the identification of trends in health education, such as: (a) a normative and behaviorist approach, which aims—through persuasion, imposition, and normalization of behaviors—to eliminate inadequate hygienic habits or harmful attitudes, being linked to biomedical models of action; (b) a preventive and behaviorist approach, also connected to the medical field, which proposes activities centered on immediate behavioral change and the adoption of preventive measures; and (c) a pedagogical-reflective approach, which seeks to overcome biomedical models in health education by fostering, through teaching and learning processes, the development of reflective and critical capacities that connect scientific knowledge, everyday life, and health-related decision-making (Venturi & Iared, 2022). These are important perspectives that emerge for reflecting on investigations and discussions concerning Health Education in schools, within science teaching. Thus, the objective of this study is, through a theoretical essay, to identify the main discussions presented and the future challenges for Health Education within the field of Science Education².

We adopted the format of a theoretical essay as a methodological and theoretical perspective, according to Severino (2000) and Meneghetti (2011), who consider the essay as a strategy for producing new knowledge through the reflective and interpretative exposition of experienced researchers in a field of study, aiming to expand analyses and propose theoretical inferences and dialogues with already consolidated references. In the present text, we highlight Health Education and its constitution as a field of investigation within and alongside Science Education. The reflections presented as preliminary responses to our objective take into account the concept of field proposed by Pierre Bourdieu (1994; 2004), that is, a field can be characterized by a set of values and forms of capital, structured through relations of power and struggles that compete for space, authority, and legitimacy. Within this structure, the author considers habitus as the set of dispositions embodied by the actors—in the case of Health Education within Science Education, those elements that researchers consider pertinent within the field.

However, it is necessary to discuss and reflect on what can still be considered legitimate within our field of investigation and what needs to be overcome or reserved for other important fields of knowledge. Thus, we organized the text² as follows: (1) Health Education in Schools: What Needs to Be Overcome?—a section that reflects on the problems related to how schools develop health education; (2) Health Education: A Field of Investigation in Science Education—which critically and reflectively emphasizes scientific production and research activities in the field, in dialogue with systematic reviews and state-of-the-art studies; (3) Scientific, Technological, Media, and Health Literacy—which discusses how these theoretical elements relate to health education within science education for citizenship

formation; (4) Health Education: Global Health and Planetary Health—in which we discuss important and emerging concepts in the field that intertwine with science education in the context of climate and health crises; and, finally, the concluding remarks of the essay.

HEALTH EDUCATION IN SCHOOLS: WHAT NEEDS TO BE OVERCOME?

Studies discussing the problems of health education developed in schools date back many years. Schall (1996) reported that teaching anatomical and physiological concepts, as well as health–disease processes, is not sufficient for the development of citizenship. Mohr (2002) strongly criticized objectives centered on behavior change through the inculcation of health habits and rules to be followed in order to prevent diseases. However, more recent studies, such as those by Sousa, Guimarães, and Amantes (2019), and Venturi and Mohr (2021), demonstrate that this informative and unidirectional model continues to be adopted by schools and by science teaching, reinforcing an understanding of Health Education (HE) as normative, which

[...] is related to objectives traditionally associated with HE, aimed at immediate behavioral changes, thus leading teaching to adopt a stance of prescribing rules of conduct and disease prevention. School practice within this HE approach generally relies on directive, instructive, and/or technicist strategies. However, even when it incorporates a social and environmental dimension into HE (which is often not the case), it still aims at the creation of attitudes, behaviors, and healthy habits (Venturi, 2018, p. 70).

This model is linked to a biomedical framework that prioritizes behavior change rather than knowledge construction. However, this model has not contributed to changing behaviors, nor does it enable individuals to understand the concepts, theories, and knowledge involved in health behaviors (Venturi, 2018) and in issues related to health and science, as illustrated by the examples presented in the introduction of this text.

Venturi and Mohr (2021) criticize this way of conceptualizing the objectives, strategies, and actions of Health Education, arguing that they stem from periods in the national past when school activities were linked to biomedical actions, designated as sanitary education, hygienic education, childcare (puericulture), among others, implemented by health services in historical contexts in which they may have been considered acceptable or justifiable (or not). These approaches even included repressive actions and perspectives imposed during periods such as the Brazilian military dictatorship (Qualho-Muniz, Iared, & Venturi, 2024), incorporating eugenic ideals (Santos, 2011) and based on coercion—elements that bear no resemblance to the teaching and learning processes currently advocated in science education.

These biomedical approaches are grounded in the health–disease dichotomy, while hygienist approaches are characterized by the teaching of bodily hygiene strategies for disease prevention, disregarding social, economic, environmental, and other realities (Venturi & Mohr, 2021). In this way, a normative, preventive, and behaviorist tendency is established, in which it is assumed that appropriate behavior would be achieved simply through the reception of information about healthy, hygienic, and preventive practices. These are approaches historically entrenched in the Brazilian school context, which

[...] have resulted, in the present, in a form of HE in the school context that we characterize as normative, linked to objectives of immediate behavior change, condemning teaching to a stance of prescribing conduct for the prevention of diseases and health problems. School practice within this HE approach has generally relied—and continues to rely—on directive, instructive, and technicist strategies (Venturi & Mohr, 2021, p. 17).

This technicist, content-based, uncritical, and informative perspective engages little or not at all with the construction of scientific knowledge—about science and about the practice of doing science in the field of health. Nor does it contribute to confronting health misinformation or to establishing the trust that science requires in order to overcome denialist movements. Furthermore, when combined with the curricular silencing imposed by the Base Nacional Comum Curricular (MEC, 2018; Venturi & Mohr, 2021), it forms an amalgam that has become the focus of discussions, reflections, and proposals in research in science education, with the aim of overcoming it both in practice and in research. In the following section, we discuss the propositions within our field of investigation.

HEALTH EDUCATION: A FIELD OF INVESTIGATION IN SCIENCE EDUCATION

Health Education—its discussions, research lines, and the constitution of a field of research within Science Education—has been the focus of studies over the past twenty years. Venturi and Mohr (2011, 2019) analyzed the production presented at the Encontro Nacional de Pesquisa em Educação em Ciências (ENPEC) from 1997 to 2017, identifying the initial emergence of research on Health Education in 1999, along with the establishment of a thematic line within that event. However, the authors highlight the growth and consolidation of this research field, particularly emphasizing studies on educational strategies and teachers' perceptions regarding health education. They also discuss the prevalence of biomedical perspectives, or normative approaches linked to normative, preventive, and behaviorist trends in health education, reflecting both the origins of the field and school practices themselves (Souza et al., 2015; Venturi & Mohr, 2019).

These studies, which analyzed scientific production at ENPEC, found results similar to those of Silva and Teixeira (2015), who examined theses and dissertations in the field. Their findings revealed a strong connection between health education and biomedical perspectives centered on behavior change for health promotion, both in schools and in academic research itself. In other words, reflecting on the nature, objectives, and methodologies of research in health education within science education has been—and perhaps continues to be—an important challenge for the field. It implies shifting approaches and perspectives from a medical field to an educational field, grounded in different epistemologies, theories, and perspectives that inform both research practices and teaching practices in schools.

However, from 2013 onward, “we highlight that academic research shows progress, especially the increasing presence of investigations grounded in reflective perspectives of HE” (Venturi & Mohr, 2019, p. 7). In the study by Venturi and Mohr (2019), it is possible to observe an expansion in the number of theoretical reflections which, in the form of systematic reviews, critical analyses, and theoretical essays, focus on questioning the health education implemented in

schools, as well as its nature and methodologies. Umeres and Venturi (2023) complemented studies on scientific production at ENPEC by analyzing the proceedings from 2019 and 2021, identifying a promising panorama, given the quantitative and qualitative increase in research on health education within the field of science education, along with an expansion of critical and reflective perspectives. The authors point out “a growth and consolidation of this conception within academic research; these studies question and seek to reflect on issues involving HE and the school, both in teacher education and in HE activities carried out in the educational context” (Umeres & Venturi, 2023, p. 8).

Another important contribution, which deserves mention as an example of the consolidation of Health Education as a field of research in Science Teaching, is the work “Pesquisas, Vivências e Práticas de Educação em Saúde na Escola”, which brings together 26 chapters by authors from across Brazil, as part of a “Science Teaching” collection published by the Federal University of Fronteira Sul (UFFS) (Silva & Venturi, 2022). The chapters discuss the nature and practices of health education, demonstrating both theoretical and practical advances, especially in teacher education, and proposing new ideas from researchers and educators in science education, with emphasis on teaching and learning perspectives.

From this brief overview of research in health education within science education, we can identify gaps and the need for a more critical and reflective health education, grounded in both the school context and in science education research. It involves committing to a dialogue of knowledge, to the construction of scientific understanding, and to teaching and learning processes aimed at forming citizens aware of their responsibilities. Thus, we understand that the field of investigation is consolidated by proposing alternative ways of thinking about health education. In this sense, in the next section we present our discussions and arguments regarding both research and practice.

SCIENTIFIC, TECHNOLOGICAL, MEDIA, AND HEALTH LITERACY

Para contrapor tendências normativas, preventivas e comportamentalistas, In order to counter normative, preventive, and behaviorist trends—considered outdated for the school context—Mohr (2002) discussed the need to understand health education as a set of curricular activities, planned with pedagogical strategies and with teaching and learning objectives related to topics, themes, or content concerning individual and/or collective health (Mohr, 2002). Furthermore, when linked to science education, health education aims at the “development of the capacity for analysis, critical thinking, and the perception of the multiple relationships between the nature of the phenomena and issues studied and society” (Venturi & Mohr, 2015, p. 2). This understanding was termed by Venturi (2018, p. 29) as Health Education from a Pedagogical Perspective, since

it is centered on the construction of knowledge about health-related topics and aims to teach knowledge through reflection and autonomous thinking, in order to promote cognitive interrelations among the various forms of knowledge involved in decision-making regarding individual and collective health. This approach differs from the mere transmission of information aimed at behavior change [...].

In other words, the primary objective lies in the construction of knowledge.

To achieve this goal, critical, reflective approaches and/or those derived from science education pedagogy are adopted. An eventual change in behavior (neither mandatory nor immediate) may occur later. In addition to social and environmental dimensions, this HE approach also takes into account cultural, psychological, emotional, and cognitive aspects (Venturi, 2018, p. 70).

As researchers in this field, we agree with this way of understanding health education in schools, in science teaching, and in science education research, which considers the diversity of knowledge involved in decision-making processes related to individual and collective health. Moreover, it is directly connected to processes of scientific and technological literacy. Regarding scientific and technological literacy, we align with Fourez et al. (1997), who define it as a process through which individuals can appropriate knowledge from disciplinary areas, articulating it in an interdisciplinary way, in order to assume an active and autonomous role in society and in the scientific and technological world in which we live. Autonomy includes the power to choose whether or not to use scientific knowledge, while respecting the various forms of knowledge produced by society, among which we highlight those related to individual and collective health.

By articulating Scientific and Technological Literacy (STL), as proposed by Fourez et al. (1997), in favor of a pedagogical perspective for health education, Mohr and Venturi (2013, p. 2350) discussed the pillars necessary for the school context, in which the aim is to develop

(...) autonomy in relation to knowledge, allowing individuals to free themselves from ready-made formulas, rules, orders, and prescriptions imposed by others regarding what is appropriate or healthy to maintain or restore health. The perspective of communication in STL allows for negotiation with knowledge and the construction of models of action. Here, theory and concepts are viewed as shared mediation in human communication. This perspective is diametrically opposed to that of recipes or rules of thought and behavior that do not allow for dialogue. Finally, skills enable knowing how to act and having the power to act, which, in practice, materialize as a capacity for action defined by each individual and not by a supposed expert who claims, a priori, to know what is good, appropriate, and healthy for everyone. Thus, a scientifically and technologically literate individual will not passively accept ready-made norms but will have the capacity to negotiate with them.

In this way, it is possible to understand that a student may reflect on a given health-related issue and that this reflection does not necessarily result in a behavior that is said—or supposedly considered—correct or desirable, based on population statistics (Venturi & Mohr, 2015), thus overcoming behaviorist assumptions. Therefore, a scientifically literate individual, even if they understand scientific knowledge and its relationships and “have the autonomy to choose not to be vaccinated against COVID-19, will understand that they do not, in fact, have the right to refuse immunization, since it is a social commitment aimed at protecting others” (Venturi, 2022, p. 161).

However, the COVID-19 pandemic brought new elements to the debate, as it demonstrated that scientific and technological literacy alone is no longer sufficient for what has been discussed in terms of health education from a pedagogical perspective. The spread of misinformation, denialist movements, and the promotion of pseudoscience highlight the need to integrate media literacy into scientific and technological literacy. Media literacy has already been discussed as the capacity or “ability to consume news while being able to distinguish what is

false from what is true” (Scofieldt-Jr, 2019, p. 65). Discussions surrounding media literacy involve identifying fake news filled with conspiracy theories, falsehoods, and dishonesty, which create misinformation bubbles (Scofieldt-Jr, 2019).

Media literacy is not about teaching through media, but about teaching about media. According to Marquette (2020), it is necessary to understand this distinction, as there is a tendency to use these different terms as if they were equivalent. For the author, media literacy can be understood as a goal to be achieved, involving practices, actions, activities, and policies aimed at promoting a critical and qualified relationship between the public and the media. From this perspective, a media-literate student is capable of interacting critically and consciously with digital media, questioning the veracity of viral content on controversial topics (Marquette, 2020), such as climate change or vaccination. This goes far beyond the immediate acceptance of information; it involves analyzing whether content has been manipulated or taken out of context, seeking reliable scientific sources, and using this evidence to build informed opinions, thereby avoiding the influence of misleading or manipulative discourse.

Given the complexities surrounding information and knowledge about health, another concept has been discussed internationally and is still little explored in Brazil: health literacy. Health literacy is an important concept for understanding how individuals comprehend, access, interpret, and use health-related information in their daily lives, with the aim of caring for their own health or that of others (Peres, 2023). According to Moraes et al. (2021), there is no single, universally accepted definition of the term. However, in search of a more consolidated understanding, the World Health Organization defines health literacy as the set of cognitive and social skills that influence individuals’ motivation and ability to access, understand, and use information to promote and maintain their own health and that of the community (WHO, 2025).

According to Berkman et al. (2011, p. 10), health literacy can be considered a process characterized by the “degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate decisions.” This definition highlights not only the importance of understanding texts or numbers, but also the ability to act based on this information—a conception that aligns with our studies, especially in relation to health decision-making.

Initially, Berkman, Davis, and McCormack (2010) understood health literacy as the ability to read and comprehend basic health information, such as medication labels or medical instructions. Sørensen (2019) also points out that, at that time, health literacy had an individualistic conception, in which each person was considered fully responsible for their own level of knowledge. Currently, however, this concept adopts a relational perspective, recognizing the importance of interactions between individuals, practices, and social structures in the development of the ability to understand and use health-related information. In this sense, more recent definitions have expanded the initial scope, incorporating cognitive and social skills that allow individuals not only to access information, but also to critically evaluate it and use it to make informed decisions (Berkman, Davis, & McCormack, 2010).

While health literacy is still little used in national literature, health education has been consolidating itself as a field within science education. Therefore, it is essential to discuss and understand that health education and health literacy are distinct concepts. As highlighted by Santana et al. (2017), health literacy may, in some respects, be confused with health education. However, although they share similar objectives, the key distinction lies in the fact that health literacy can be understood as a process resulting from health education, assuming a thematic role or functioning alongside scientific literacy, as previously discussed in this section.

Therefore, by articulating scientific and technological literacy, media literacy, health literacy, and health education, we seek to theoretically advocate—while also considering research and classroom practice in science education—for the formation of critical, reflective, and autonomous individuals. We argue that such individuals should be capable of making informed decisions, understanding media (especially social media), and developing digital communication skills—particularly in interpreting, creating, and sharing health-related informational content responsibly—alongside an ethical awareness of the relationships between individual, collective, and community health (or even One Health³). Based on these perspectives and educational objectives, we consider that health education can contribute to valuing science, identifying health risks and misinformation, understanding their relationships with the environment and society, as well as fostering a critical perspective on public policies involving scientific and health knowledge.

Furthermore, we consider that the field of health education within science education has been engaging with other emerging reflections and discussions in the global (international) context, which have had limited dialogue with national research. In this regard, we refer to discussions on global health and/or planetary health, which we briefly present in the following section.

HEALTH EDUCATION: GLOBAL AND PLANETARY

Global emergencies, such as the COVID-19 pandemic—the most severe recent public health episode of the past decades—and climate change are both interconnected and result from unsustainable practices and accelerated economic and social development (Schmitt et al., 2022). These elements highlight the importance of incorporating discussions involving global health and planetary health into health education processes in schools and in research on health education within science education.

According to Cueto (2015), the concept of global health originated from major global epidemics (cholera and yellow fever) and from bilateral agreements established in the second half of the nineteenth century, as well as from the creation of health agencies, such as the World Health Organization, in the first half of the twentieth century. Therefore, the term global health emerges in association with the process of globalization, which became predominant in economic and political discourse after the end of the Cold War. Although it initially served, in part, as a rhetorical device reflecting a limited concern of global elites for population health, from the late twentieth century onward the concept broadened to address challenges arising from globalization, such as the emergence of new diseases or

the spread of existing ones—such as the human immunodeficiency virus (HIV)—affecting both wealthy and low-income countries (Cueto, 2015).

Since then, the concept of global health has been adopted by the WHO, as well as by international institutions, in educational activities, preventive actions, and public policies aimed at reducing health inequalities and promoting equitable, high-quality healthcare accessible to all, regardless of location. Such actions include initiatives like humanitarian aid, international medical cooperation (e.g., organizations such as Doctors Without Borders), and support for countries affected by conflicts, refugee crises, or severe epidemics, such as tuberculosis, malaria, and Ebola (WHO, 2007). This also includes climate refugees, who are increasingly displaced globally due to climate change.

The pursuit of global health requires integrated actions that go beyond national policies, promoting international cooperation involving investments, research, access to healthcare systems, humanitarian support, and educational processes—areas in which the field of health education has much to contribute. The concept of global health can also be associated with the concept of planetary health, defined by Barros-Platiau and Schleicher (2023, p. 9) as a conception of health that adopts “a holistic view of the relationship between the human population and the natural ecosystems that make up Planet Earth.” For these authors, this implies thinking about health practices that establish an integrative and transdisciplinary approach to problems and their consequences, thus acquiring a global character similar to that of global health. Planetary health focuses on the interrelationship between the health of all forms of life and the importance of maintaining the healthy functioning of ecosystems, considering local communities as well as the environmental and global impacts of economic and developmental human activities.

Nascimento et al. (2025) illustrate that deforestation in the Amazon affects not only biodiversity and local communities, but also the global climate balance, influencing the occurrence of droughts, floods, extinction of fauna and flora, and the emergence of new infectious diseases. The authors establish links between deforestation and diseases affecting humans, demonstrating that deforestation contributes to increased respiratory illnesses, the spread of pathogens, and the deterioration of water and air quality, thereby impacting planetary health (Nascimento et al., 2025).

Thus, health education, as a field within science education, is no longer isolated in discussions that were once behaviorist and limited to health–disease processes or anatomical and physiological aspects. We argue that it is necessary to integrate and articulate health education with the field of environmental education in order to address issues such as ecosystem conservation, well-being in communities (Venturi & Iared, 2022), the preservation of all forms of life, mitigation of irreversible impacts, and the defense of public policies that move away from excessive consumption and fossil fuel dependence. This involves a necessary collective effort toward planetary health, aimed at protecting the health and future of the next generations of life on this planet.

FINAL CONSIDERATIONS AND REFLECTIONS, THOUGH NOT CONCLUSIVE

In this theoretical essay, we aimed to identify the main discussions presented and the future challenges of Health Education as a field of research within Science Education. We discussed the constitution of Health Education as a field within Science Education, which may still be considered incipient, yet is increasingly taking shape as a field of investigation, as discussed by Pierre Bourdieu (1994), encompassing the formulations, understandings, theoretical developments, choices, and refusals that are part of cultural and scientific production. In our case, these are particularly relevant to the research we have been developing and which is represented in this dossier, organized by a journal associated with Science Teaching/Science Education. We emphasize the challenges of overcoming normative, preventive, and behaviorist trends in favor of a pedagogical perspective—or another perspective—grounded in educational sciences rather than in medical sciences.

Furthermore, other elements, as discussed by Moreira, Guimarães, and Campos (2020), involving corporeality as a means of mediating between the sensible and the intelligible, need to be addressed within this field of research. As exemplified by the emerging discussions of Venturi and Iared (2022), these reflections aim at harmony and balance among body, mind, and environment, based on reflective-pedagogical perspectives, as mentioned at the beginning of this text, and which articulate health education with environmental education. This articulation is particularly important, especially in connection with the concepts of global health and planetary health.

Likewise, we raise theoretical discussions proposed within the field as ways to overcome biomedical perspectives in health education. To this end, we incorporate theoretical frameworks of scientific, technological, media, and health literacy. Scientific and technological literacy provide the foundation for individuals to understand complex and interdisciplinary phenomena, while media literacy enables them to navigate critically within a context marked by misinformation and anti-scientific narratives, especially in digital environments. Health literacy emerges as a key element in topics involving health knowledge, the processes of knowledge production in health, and dialogue with community-based knowledge.

This perspective considers health literacy as encompassing, among other aspects, health and quality of life, as well as health promotion (Malloy-Weir et al., 2016). It is a holistic perspective of health literacy aimed at citizenship formation, fostering students and a society that are more tolerant, anti-racist, and aware of the influence of different cultures on health. It also recognizes the importance of art and civilization for health, while addressing health misinformation, environmental threats, and climate change. This perspective understands the importance of physical, mental, and social health, values and protects the environment, and promotes health globally (Bröder et al., 2017), including all forms of life—not only human life—within the concept of health. This combination is essential for developing citizens capable of engaging with scientific knowledge, identifying reliable sources, interpreting scientific information and data, and recognizing the impacts of their health-related decisions beyond individual interests, fostering an ethical, social, collective, and community-oriented commitment.

These theoretical and practical perspectives constitute our contributions to an agenda for reflection and research in the field of Health Education within Science Education. We also reaffirm our position that the consolidation of Health Education as a research field within Science Education—still incipient despite its significant advances—depends on joint efforts by the scientific community and by educators in the fields of Teaching and Education within the Coordination for the Improvement of Higher Education Personnel (CAPES), with the aim of expanding academic production, rethinking pedagogical practices, and strengthening teacher education. The construction of national and international collaboration networks among researchers, teachers, and educational policymakers may also contribute to the implementation of more robust public policies that recognize science and the practice of doing science as a common good, of great value for dialogue with everyday knowledge and for teaching and learning about health-related issues.

Finally, just as it is essential to preserve the memory of past times—such as the image that opens this text—or to recover public memory regarding the success of vaccination, we consider it fundamental that the histories and memories of the constitution of a field of investigation be recorded. We hope that this essay has contributed to such a record, even if only partially, and that it may help ensure that this history is told, analyzed, and contributes to the advancement of this field of study, research, and practice within Science Education.

ACKNOWLEDGMENTS

The first author acknowledges the Research Productivity Fellowship granted by the National Council for Scientific and Technological Development (CNPq). The third author acknowledges the doctoral scholarship granted by the Coordination for the Improvement of Higher Education Personnel (CAPES).

NOTES

1. Information available at: <https://www.kz-gedenkstaette-dachau.de/>.
2. A preliminary version of this essay was submitted, approved, and presented at the XV Encontro Nacional de Pesquisa em Educação em Ciências (ENPEC), held in August 2025 in Belém, Pará, Brazil. However, in the present version, the discussions have been expanded, new sections have been incorporated, and the considerations have been revised and expanded.
3. According to the Brazilian Ministry of Health, “One Health” is the English term translated as “Saúde Única”, referring to an integrated approach that recognizes the connection between human, animal, plant, and environmental health. The One Health approach promotes and encourages communication, cooperation, coordination, and collaboration among different disciplines, professionals, institutions, and sectors in order to provide more comprehensive and effective solutions. Available at: <https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/u/uma-so-saude>.

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Received: Oct. 30, 2025

Approved: Apr. 13, 2026

DOI: <https://doi.org/10.3895/actio.v11n2.21120>

How to cite:

Venturi, T., Silva, R. A. R. da, & Martins, V. E. G. (2026). Health education as a science education research field: reflections, challenges and potential. *ACTIO*, 11(2), 1-18. <https://doi.org/10.3895/actio.v11n2.21120>

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Recebido: 30 out. 2025

Aprovado: 13 abr. 2026

DOI: <https://doi.org/10.3895/actio.v11n2.21120>

Como citar:

Venturi, T., Silva, R. A. R. da, & Martins, V. E. G. (2026). Educação em saúde como campo de pesquisa na educação em ciências: reflexões, desafios e potencialidades. *ACTIO*, 11(2), 1-18. <https://doi.org/10.3895/actio.v11n2.21120>

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