cover: picasso, *las meninas* (1957)

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article

each: an erasmus+ project on early childhood and sustainable citizenship routes in the era of digital transformation.

some initial outputs: proposals and preliminary findings

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abstract

This article explores key elements necessary to adopt a critical stance toward the ongoing digital transformation in education, focusing on how the Philosophy for Children (P4C) methodology can support a healthy transition that fosters collaborative and inclusive thinking. To illustrate these claims, the paper presents an Erasmus+ Project called EACH, describing its development and initial outcomes, including the application of newly developed materials in kindergarten settings. The findings suggest that sustainable education stands to benefit significantly from becoming a central concern in digital transformation processes, particularly in promoting collaboration and inclusivity within pedagogical practices. After outlining the project, highlighting key insights from its initial theoretical report, and reporting on first-stage implementations in Portugal, Poland, and Italy, the paper concludes by identifying promising areas for future research aimed at reinforcing a humanistic approach to digital transformation in education.

keywords: philosophy for children; sustainability; digital transformation; collaborative thinking; inclusive education.

each: un proyecto erasmus+ sobre la primera infancia y las rutas de ciudadanía sostenible en la era de la transformación digital.

algunos resultados iniciales: propuestas y conclusiones preliminares

resumen

Este artículo explora los elementos clave necesarios para adoptar una postura crítica ante la transformación digital en curso en la educación, centrándose en cómo la metodología Filosofía para Niños (FpN) puede impulsar una transición saludable que promueva el pensamiento colaborativo e inclusivo. Presenta el proyecto EACH, describiendo su desarrollo y resultados iniciales, incluyendo la implementación práctica en educación infantil de los materiales desarrollados. El trabajo desarrollado en el marco del proyecto sugiere que la educación sostenible se beneficiará significativamente al convertirse en una preocupación central en los procesos de transformación digital, en particular en la promoción de prácticas pedagógicas colaborativas e inclusivas. Tras describir el proyecto y destacar sus principales objetivos en la descripción de los primeros documentos que dieron lugar a la colaboración internacional, también describimos algunas de las conclusiones de la primera implementación práctica, llevada a cabo simultáneamente en Italia, Polonia y Portugal. Esto nos permite reforzar la identificación de algunas áreas prometedoras para futuras investigaciones que buscan fortalecer un enfoque humanista de la transformación digital.

palabras clave: filosofía para niños; sostenibilidad; transformación digital; pensamiento colaborativo; educación inclusiva.

each: um projeto erasmus+ sobre a primeira infância e percursos de cidadania sustentável na era da transformação digital.

alguns resultados iniciais: propostas e conclusões preliminares

resumo

O presente artigo explora os elementos-chave necessários para adotar uma postura crítica em relação à transformação digital em curso na educação, focando como a metodologia Filosofia para Crianças (FcC) pode auxiliar uma transição saudável que promova o pensamento colaborativo e inclusivo. Para ilustrar essa proposição, o texto apresenta o projeto Erasmus+, denominado EACH, descrevendo seu desenvolvimento e seus resultados iniciais, que incluem a aplicação de materiais desenvolvidos em contextos de Educação Infantil. O trabalho desenvolvido no âmbito do projecto sugere que a educação sustentável beneficia ao tornar-se uma preocupação central dos processos de transformação digital, sobretudo na promoção de práticas pedagógicas de colaboração e de inclusão. Após delinear o projeto e destacar os seus principais objetivos na descrição dos primeiros documentos que resultaram da parceria internacional, descrevemos também algumas das conclusões da primeira implementação prática que teve lugar na Itália, Polônia e Portugal, simultaneamente. Isso permite reforçar a identificação de algumas áreas promissoras para futura investigação que visem fortalecer uma abordagem humanística à transformação digital.

palavras-chave: filosofia para crianças; sustentabilidade; transformação digital; pensamento colaborativo; educação inclusiva.

each: an erasmus+ project on early childhood and sustainability citizenship routes in the era of digital transformation.

some initial outputs: project proposals and preliminary findings

introduction

The world has been radically changing in the last decades, and even though climate change issues have arisen most intensely in interest, at least since the 1960's, it has by now become an inescapable challenge which the 21st century must face (Léger-Goodes et al., 2022, p. 2). In addition to the way the climate crisis demands an ongoing reformulation of human action for preserving the Planet, the rapid digital transformation is simultaneously modifying the social and cultural environment. Thus, the urgent need to educate people so as to be able to deal with the digital world and simultaneously to foster a sustainable future has demanded a reinvention of all schooling ages. Although Early Childhood Education and Care (ECEC) appears to be the most challenging area to address, it simultaneously presents itself as the ideal place to begin. It is challenging because one cannot simply explain to kindergarten children how, in recent years, industrialized societies and technological and digital innovation have put the planet and the survival of our species at risk. Moreover, efforts to teach children the importance of recycling and caring for nature often seem insufficient to foster a genuine concern and lasting attitude of care for the planet. Similarly, telling children to be wary and cautious with the digital world is useless in face of the enormous increase of availability of digital tools at their reach, and the frequent way in which children use mobile phones and tablets even when they come from families which are critical and against their use and abuse. Thus, ECEC may be the best starting point even though it does not appear very intuitive because they do not know how to write and read. In fact, because the earlier we educate children to care for the environment and to have a critical attitude towards digital information, the deeper and more lasting the impact is likely to be, ECEC remains the ideal starting place.

Given that it seems increasingly difficult to shield children from the misuse of digital tools, and equally important to safeguard their future use from digital

abuse and the misguided application of AI technologies more broadly, the need to educate for the digital transformation may be as urgent as fighting climate change, even if it looks less dramatic. In fact, the pace of digital transformation has accelerated so rapidly that it calls for a renewed pedagogical approach—one that both protects individuals and empowers them to use digital tools intelligently. Education for the digital transformation must therefore address the integration of innovative technologies while also preserving cultural and social practices essential to maintaining core human capacities, as well as mental habits that enable individuals to protect themselves.

In recent years political guidelines at worldwide level have shown growing attention to global and sustainable citizenship and key competences (UNESCO, 2015; U.N., 2015). These are crucial to promote the increase of subjects capable of developing and inhabiting free, inclusive, peaceful contexts, aiming at justice, equity and sustainability (Council of the European Union, 2018; Council of Europe, 2018). In this frame, the discourse about interaction between digital citizenship and transversal skills is of primary importance and an ideal intersection for education to global sustainability.

Since one of the most effective ways to address these two radical changes and their corresponding challenges is to integrate them into education as early as possible—thereby fostering an innovative and interconnected pedagogical approach—the Erasmus+ project EACH (*Early Childhood and Sustainable Citizenship Routes in the Digital Era*) naturally emerges from this state of affairs. EACH was designed precisely to suggest ways to use the digital transformation to increase awareness of climate change issues so as to promote future global action of sustainable citizenship. Aimed at ECEC it hopes to inspire other levels of education, as well as contribute to improving education as a whole, regarding these two transformations.

In this article, we outline the general background of the project and examine how it leverages digital education to promote sustainable citizenship. We explore how raising awareness of climate change can be fostered as to nurture critical and collaborative thinking while introducing digital technologies into Early Childhood

Education and Care (ECEC), with the aim of creating educational pathways that support the development of transversal competencies.

The structure of the paper is as follows: after providing a general overview of the project, including its main guidelines and expected outputs, we present some of the key findings from the initial report, *R-EACH*. This section highlights crucial elements that can support a critical stance toward the ongoing digital transformation in education. We then describe preliminary results from the first implementation of the project's educational materials, carried out in schools in Italy, Poland, and Portugal, along with the project's follow-up plan. Finally, we conclude by identifying future research directions to be pursued throughout the remainder of the project and beyond.

each project - context, implementation, expected outputs

In 1987 the World Commission on Environment and Development presented the report "Our Common Future" (U.N., 1987), prompting reflections on the concept of sustainable development and highlighting the principles of intergenerational and intragenerational equity. In 1994, the World Health Organization introduced the concept of Life Skills—later revised and refined in 1997 (WHO, 1997)—referring to abilities that enhance adaptability and positive behavior, enabling individuals to meet the demands and challenges of daily life while promoting individual mental well-being, social interactions, and healthy behaviors.

Since then, reflections on these issues have continuously developed and expanded. For over three decades, the international community has been questioning how to promote and support competencies considered crucial not only for individual well-being and personal fulfillment but also for the development of individuals and communities as to be able of think critically and live in free, inclusive, and peaceful contexts that aims for justice, equity, and sustainability.

Today, more than 30 years after these reflections first emerged, where do we stand? In a world marked by a profound climate crisis, increasing social and economic inequalities, challenges to fundamental rights, conflicts, aggression, and

individualism (Amnesty International, 2024; Bauman, 1999; Ceruti, 2018; Chomsky & Pollin, 2020; Morin, 2022). Inevitably questions arise: What is the role of schools in promoting these crucial competencies? How can we care for and protect the environment for future generations? Do digital technologies bring us closer to or distance us from nature? More specifically: how to introduce themes of sustainability and climate crisis in ECEC while simultaneously offering children a critical stance in face of the digital transformation of the world?

It is within this framework of considerations (see also Davis & Elliot 2024) and questions that the international project was launched in 2024. Encouraged by the more recent global and European policy orientations that have shown strong attention to themes of global and sustainable citizenship (U.N., 2015; UNESCO, 2015, 2016) and key competencies (Council of Europe, 2018; Council of the European Union, 2018). These more recent considerations have shown that among these competences, which are believed to help individuals act consciously in face of the challenges posed, we can find active citizenship, social, critical thinking, metacognitive, and digital abilities. Now, promoting these also means encouraging respectful dialogue among individuals, valuing ways of thinking that grasp the interconnections between phenomena (Morin, 1999, 2022), and philosophical dialogues foster awareness of how one's opinions are formed, recognizing their partiality and fallibility (Lipman, 2003). This is especially important in a context where information—of any type and quality—is increasingly accessible and rapidly available due to digitalization. One can assume that transversal and digital skills in ECEC are strongly interconnected because developing digital skills means promoting an informed and reflective use of digital technologies. Inevitably this means that critical thinking and meta-cognitive skills should accompany and support the development of the digital ones and vice versa (Edwards, 2013) in all age groups and, importantly, also in ECEC.

The project was designed to further explore the multiple connections between digital, collaborative and reflective competences and show in practice how digital skills and these competences can be fostered together. The project will show in practice how environment and climate change awareness, and key competences development can mutually reinforce each other. Ultimately, the

project goal is to provide professionals with tools to nourish transversal key competences (critical thinking, social skills and meta-cognitive skills) and digital competences in pre-schools, by implementing—with the support of digital technologies—participatory educational actions (e.g., based on "Community of Enquiry" approach) able to contribute to a collaborative knowledge-building for sustainable and climate change education. In order to ensure harmonious intervention for schools around the world, preschool children from three different countries (Italy, Poland, and Portugal) will implement the proposal—through experimentation in each country—and exchange of insights from implementation to select the best practices for collaborative educational approaches and practices that help develop sensitivity, awareness, and critical thinking on environmental sustainability and the climate crisis.

In this way the project fosters intelligent interaction between education, philosophy, psychology and media education by making digital citizenship skills the focus of dialogue and collaborative practices in what concerns the awareness of the environment while reinforcing the awareness about environmental and climate-change challenges. The reason to focus on these issues to ground and integrate all planned educational actions lies in the urgent need for a strong commitment towards environmental sustainability and against climate change (U.N. SDG 2030).

Previous research work in P4C had already shown the importance of the interconnection (MacDonald & Bowen, 2015, 2016; Bowen, 2016; MacDonald et al., 2017; Birch, 2020; Point & Champoux, 2024). The rationale is that when we become aware of our inevitable connection to the fate of other living beings. We also become aware that all living beings do not simply "exist" but "exist in relation to" other living beings and to the environment, to use Bateson (1979) description. The impact of human actions on the planet, and of the consequences of our individual choices (regarding resource use, food consumption, waste management, etc.) is a fundamental step in developing ecological consciousness and promoting sustainable development. This is all the more important since even very young children experience the so-called eco-anxiety, that is, a family of distress responses—such as persistent worry, fear, grief, guilt, and

helplessness—arising from perceived and anticipated threats of climate and ecological change; it is often a normative reaction but can become impairing when intense or prolonged, especially among young people. Evidence shows that children and adolescents experience eco-anxiety and related emotions, with large cross-national surveys and scoping reviews documenting high levels of worry, functional impacts, and diverse affective responses (e.g., sadness, anger, fear) (e.g., Hickman, 2021; Léger-Goodeset al., 2022; Pihkala, 2020).

In fact, to educate without promoting the needed varied emotional landscape will inevitably lead to eco-anxiety. Thus, Léger-Goodes et al. recommend emphasizing collective action, empowering student-led action to promote realistic optimist and realistic positive thinking by using literature as a tool to discuss climate change with children (Léger-Goodes et al., 2022, p. 10). Previous research on the interconnection of P4C and climate change challenges and topics around sustainability has already identified how discussions can be meaningful and sufficiently complex when people "consider the various environmental contradictions we live by and with and the way we might present these to children to gently nudge both their and our own thinking forward in favourable ways" (MacDonald & Bowen, 2016, p. 27).

Following the recommendations, EACH was conceived as to promote achieving this through participatory and collaborative approaches, which means not proposing or imposing predefined responses from the adult world (expecting children to adopt them) but rather accompanying children in building—together, as a community of inquiry—a shared understanding and vision of the world and the environment. This means starting from children's genuine interests and arriving—through continuous processes of discovery, deduction, argumentation, hypothesis verification, and engagement with opposing viewpoints—at conclusions that are not necessarily definitive and sometimes can lead to new questions, but that aim at facing the challenges of climate change and of digital transformation. Within this process, adult facilitators support dialogue, which is not mere conversation but active listening and the continuous search for possibilities (Gardner, 1995). In addition, tools for non-violent management of disagreements, ensuring participation and respect for all involved (see to compare

with the approach adopted by Bleazby et al., 2023) reinforces the inclusive nature of dialogical practices (Gardner, 2015).

In the project, the digital technology was conceived as a tool for research, discovery, and discussion, and as an opportunity to educate, as is recommended by the Council of the European Union (2018), to "use, filter, evaluate, create, and share digital content" adopting a critical and responsible approach from early childhood (Buckingham, 2007; Di Bari, 2023; Rivoltella, 2019). Also, scientific researches show how these skills play a key role in learning, participation and access to wider opportunities, therefore potentially fostering inclusion and social equity (Haddon et al., 2020). These skills increase the ability to apply knowledge in different contexts, to make choices, to build knowledge in a complex way (Di Bari, 2021). Political recommendation and research outputs agree on the opportunity of fostering those competences starting from ECEC and EACH project illustrates how to make intentional, effective and appropriate use of technologies making them an intelligent educational priority (NAEYC, 2012; Donohue et. al., 2016).

Taking digital photographs, recording sounds, or creating videos, for example, allows children to become familiar with widely used tools while also uncovering their characteristics and potential. When the elements that define a digital image (such as framing choices, perspective, lighting, or the ability to zoom in) become points of discussion and comparison, it can lead to reflections on the difference between reality and its representation, how different perspectives shape knowledge and understanding, and the existence of elements invisible to the naked eye. This process can offer opportunities to recognize new elements, to establish novel relationships, and to reinterpret facts from different perspectives.

Now, even if the public debate about media and children mostly focuses on the negative effects of media (Bazalgette, 2010; Sintonen, 2009), many scholars claim the importance of Media Education starting from early childhood, not only to develop communication abilities, but also to enhance participation, social skills, self-expression and ethical competence (Varis, 2010; Kupiainen & Sintonen, 2009; Buckingham, 2007). It is by now clear that transversal and digital skills in ECEC are strongly interconnected paths. The promotion of transversal and digital competencies in early childhood education thus follows a spiral pattern: critical

thinking and metacognitive skills support an informed and reflective use of digital technologies, which in turn fosters a critical and reflective approach, creating a continuous cycle (Edwards, 2013). Since in the project all these elements are integrated and guided by environmental sustainability as a unifying theme and underlying framework, its outputs will encourage educators in a great variety of settings to similarly engage children in a growing cycle of intelligent awareness.

The countries involved in the project are Italy (represented by the University of Bologna, CADIAI and Filò), Portugal (represented by the Universidade Nova de Lisboa and Educação VIVA), Poland (represented by the Universytet Gdanski and Fundacja Be Montessori), Slovenia (with the technical partner Inter-kulturo), and Germany (with the technical partner Studio Gaus). The project started in December 2023 and shall last three years. Among the numerous activities planned within the project, one of its main objectives is the development of a Good Practice Report that can support professionals working in Early Childhood Education and Care (ECEC) in designing, implementing, and evaluating workshop-based learning pathways—mainly inspired by the community of inquiry approach—on the themes of sustainability and the environmental crisis, through the integration of digital technologies.

To arrive at this report with insights from actual practice, the first two years of the project will include the development of workshop-based learning pathways of 10 hours each that will be conducted in 9 classrooms (3 in Italy, 3 in Portugal, and 3 in Poland). Before the start of the first cycle—carried out between January and April 2025—the project members met for a self-training session to discuss the objectives of the workshops and the methodologies to be adopted in the classroom. Additionally, the project produced two documents to provide a common foundation among partners for conducting the experimentation: the R-EACH Report, which describes the starting point of the various academic and educational contexts involved in the project; and a second document that outlines the conceptual and methodological guidelines to be followed during the experiments and a portfolio with various activities to be used as possible sample materials for application. At the end of the two-year experimentation phase, in addition to drafting the Good Practice Report, the partnership will produce an

online Self-Evaluation Tool that ECEC institutions can use to monitor activities similar to those proposed by EACH educators.

r-each report

In the first year of the project, the international team prioritized establishing a common ground among partners in order to achieve the project's defined goals and address emerging challenges. This initial phase also aimed to foster a broader shared foundation among educators by producing a comprehensive report that synthesizes key insights from relevant scientific literature and European policy guidelines. The report also identifies pertinent examples of past projects and assesses how the partners' prior experiences align with national and governmental directives.

Although a complete understanding of the report can only be gained by reading it in full (see https://eduskills.plus/each), it is important to highlight that the R-EACH report recognizes two diverging trajectories within the ongoing digital transformation. On the one hand, digital technologies facilitate and enhance many aspects of human activity; on the other, they tend to generate feelings of disorientation, due to the overload of information and the constant demand to adapt to ever-evolving tools. This ambivalence is reflected in their impact on education: while both teachers and students acknowledge the benefits of technological support—and many educators see its potential to radically reshape teaching and learning—the school system remains largely unprepared for such a profound shift and even when schools invest in technological tools it is demanded that they update these tools according to advances in technological development (National Academies of Sciences, Engineering, and Medicine, 2025; Reis-Andersson, 2024).

This situation suggests that education in general, and teaching in particular, no longer feel anchored in a clear direction capable of providing the ideal conditions for shaping future experience. While students may be less aware of the long-term consequences of digital transformation, everyone recognizes that financial inequalities significantly influence the population's capacity to keep up with the pace of technological change.

Public opinion on how to proceed is also divided. Some argue that controlling technology use is necessary to ensure its proper application, while others believe that embracing digital transformation from early childhood is key to ensuring its positive use. Given that Early Childhood Education and Care (ECEC) has been shown to be strongly linked to both short- and long-term social and economic outcomes—and considering that technological development cannot be reversed or ignored—it is crucial to provide early guidelines for engaging with digital transformation, even if experts and the public are still divided on the best approach for doing so in ECEC.

For instance, PISA (2013) data show that differences in mathematics performance between students who have attended early childhood education and those who have not the amount for more than one year of formal training. This suggests that similar disparities may exist for other dimensions of education, such as sustainability, climate change, and technological literacy. While some advocate for delaying children's exposure to digital tools until they can engage with them critically, the widespread presence of mobile devices makes such postponement impractical. Consequently, it becomes essential to promote metacognitive abilities for responsible technology use from an early age.

By addressing digital literacy within ECEC, it may be possible to connect early technological exposure with the development of transversal competences such as critical thinking, social skills, and metacognitive awareness. Since skills beget skills, introducing children to a collaborative and reflective engagement with digital tools can lay the foundation for a responsible relationship with the digital world. The benefits go far beyond cognitive development and include social and cultural adaptability for the future. Ideally, digital education should be meaningful only to the extent that it empowers learners and extends significance beyond the digital itself. Thus, the core challenge should not be framed in terms of restricting technology use in early education, but rather in understanding how to make it valuable for enriching children's development. Given that ECEC cannot remain indifferent to the ongoing digital transformation (Dias et al., 2011), it becomes imperative to engage children in a form of digital education that links the use of

technological devices with a meaningful and value-oriented life, ideally equipping them to better face challenges such as climate change.

A vital way to support this goal is to design and implement educational projects that propose practical solutions for schools and educators. The R-EACH report provides an overview of the types of social and pedagogical scenarios commonly encountered in schools and universities addressing digital transformation. It also highlights key challenges that may serve as valuable points of reflection for educators. Given the complexity of the topic and the vast literature available, which can be overwhelming for individual educators, the report synthesizes key objectives, strategies, and recommendations outlined by the European Commission to foster digital education across EU member states.

The summary within the R-EACH report shows how the European Union has implemented several educational initiatives aimed at promoting digital literacy and competencies from early childhood, emphasizing the importance of developing these skills during formative years. It reviews the main frameworks, programs, and guiding principles, including the establishment of the European Digital Education Hub, designed to support Member States, monitor the implementation of the Digital Education Action Plan, and encourage cross-sectoral collaboration. This Action Plan also aims to expand the digital impact of the Erasmus+ program and improve international cooperation in digital education, with the goal of addressing the global digital divide.

While projects such as EACH can only tackle the issues within the reach of classroom educators, they focus on designing pedagogical materials, educational approaches, and self-assessment tools to guide ongoing teaching practice. Importantly, the R-EACH report identifies three major challenges that educators may face in implementing EU digital education guidelines:

1. *Providing depth in digital learning*: Early education must move beyond surface-level engagement with technology to foster meaningful and profound learning experiences.
2. *Navigating misinformation and the emergence of the "fake"*: Educators must help children develop the critical skills needed to identify and respond to misinformation in digital spaces.

3. *Understanding that digital transformation is not a neutral process*: It does not occur in a vacuum and requires nuanced, context-specific approaches that go beyond general principles and good intentions.

These challenges highlight the importance of attending to the concrete, day-to-day realities of education. It is precisely in these details that educators can most effectively engage with the complexities of digital transformation.

depth of profundity in learning

One of the most pressing challenges in Early Education for Digital Transformation is how to foster *depth and profundity in learning*. Ideally, educators should keep this concern at the forefront of their pedagogical planning, as it encourages the pursuit of strategies that promote continuity and increase quality in the use and understanding of digital technologies.

An illustrative analogy may help clarify this point. Consider the case of music education: when individuals begin learning a musical instrument, they do not automatically become musicians. Initially, they must learn to play specific pieces; over time, they improve their performance of these pieces and gradually move on to more complex compositions, all while developing greater mastery of the instrument itself. This process provides music education with a *distinct sense of depth*, progression, and refinement—qualities that are often more difficult to embed in general pedagogy.

Furthermore, learning to play an instrument can be enriched by theoretical study, including both music history and music theory. Importantly, it is also possible to acquire instrumental skills without formal training in theory, which helps to reveal the existence of different levels of proficiency and understanding—even to those who are musically untrained. In other words, even someone with no knowledge of music theory can intuitively grasp that there are dimensions of the musical world they are not accessing.

Music also teaches that being trained by outstanding teachers is not in itself sufficient to guarantee excellence in performance, just as mere practice, though crucial, does not ensure mastery. Consequently, anyone who studies a musical instrument gradually acquires an awareness of their own *developmental*

trajectory—the limits of their knowledge, its ongoing evolution, and how it varies within collaborative or ensemble contexts. By the time one becomes a mature musician, one has often internalized the idea that *the more one learns, the more there is to learn.*

Few other domains in education cultivate this kind of intellectual and reflective attitude as effectively as music does. Yet this example can serve as a *valuable compass* for guiding educational practices more broadly—particularly in the domain of digital education. If digital learning is structured with similar attention to *progression, mastery, reflection, and depth*, it can foster not only technical competence but also a lasting, critical, and meaningful relationship with digital tools and environments[1].

the false and the fake

This challenge is so pervasive that even adults must be regularly reminded of strategies to avoid being deceived in the digital world. Numerous safety recommendations exist to help individuals—and particularly educational institutions—foster a more secure digital behavior. For example, some institutions have issued practical guidelines on safe internet use. These include using strong, unique passwords; avoiding public Wi-Fi networks, especially for sensitive activities such as online shopping or banking; and ensuring that mobile phones and computers are password-protected and formatted in ways that allow data to be erased in case of theft or loss.

While these precautions are essential, especially for adults, even very young students can be taught simple digital safety habits. They can learn to avoid clicking on suspicious links, particularly those sent by unknown individuals, to be cautious of messages urging immediate action, and to recognize offers that seem "too good to be true." However, beyond these initial protective strategies, it is equally vital to *educate students on how to critically interpret language and images*, so they can detect manipulation, misinformation, and deception.

[1] Of course, the metaphor of music as compass requires a longer and more detailed description given that digital learning means both being familiar with using digital tools and using them responsibly. Thanks to the anonymous referee for calling our attention to this issue and we hope to further explore it in subsequent publications.

According to the R-EACH Report, this can be most effectively addressed by linking digital education with dialogical and collaborative learning processes—an approach that lays the groundwork for the third major challenge.

lack of rigor in digital language and fake images

Addressing the lack of rigor in digital communication and the proliferation of fake or manipulated images is a complex challenge that cannot be fully resolved across all subject matters simultaneously or continuously. Nevertheless, *focusing on specific subjects* provides valuable opportunities to model how such difficulties can be addressed meaningfully.

When digital education is anchored in a concrete subject area, it becomes possible to organize *focus group discussions* and tailor pedagogical strategies that gradually improve the quality of engagement and analysis. A dialogical and cooperative methodology encourages the interconnection of thinking and doing within educational activities. It enables students to reflect critically on both *language and visual media*, fostering a mindset that seeks evidence, coherence, and consistency in digital content.

By embedding this reflexive and collaborative approach into the learning process, educators can help cultivate a *self-corrective posture*—one that is alert to inconsistencies, skilled at identifying misinformation, and committed to intellectual honesty. Such an attitude is not only essential for navigating the digital world but also aligns with broader goals of *education for democratic citizenship and sustainability*, where careful judgment and responsible communication are indispensable.

some insights from the first application of pedagogical materials

This section presents observations from the first year of pedagogical experimentation in six participating classes (ten hours per class)—three in Italy and three in Portugal—all conducted through the pedagogy and didactics of the community of inquiry (CoI). Reflections on the activities carried out in Poland will be presented in a separate paper, as the Polish implementation integrated CoI with

Montessori pedagogy. This combination yielded interesting interactions that merit a dedicated and a separate analysis.

what are "nature" and "the natural"

Adults typically approach environmental sustainability and the climate crisis with a particular conception of "nature" and of the "natural." However, this understanding is often challenged when engaging in dialogue with children.

For instance, in one classroom, children were asked to identify what they believed belonged to the natural world. Their responses revealed a plurality of interpretations. Alongside typical elements such as trees, rivers, animals, and the sky, some children also mentioned tractors. When asked to justify this inclusion, they explained that tractors are used to work the land and are found in fields, thus, in their view, part of nature. In another session, a child included the character Frozen. Although the explanation was initially unclear, facilitators later realized that in the second film of the *Frozen* series, the character is depicted as a representation of Nature.

These examples—among many others—highlight important insights for educators and particularly for P4C facilitators. They underscore the need to be aware of the assumptions we bring into discussions with children and the importance of resisting the urge to correct their ideas. Rather than insisting on our normative categories—for example, by declaring that a tractor or a fictional character cannot be "natural"—facilitators are encouraged to ask for reasons and foster reflection.

There is always a risk of imposing adult convictions, especially when the discussion topic has an ideological weight. This is particularly acute in conversations on environmental issues, where adults may feel morally compelled to promote specific values. The community of inquiry approach, when combined with an educational agenda, can thus give rise to a tension—especially if adult expectations start to govern the outcomes of dialogue. Yet, as Point and Champoux (2024, 9) argue, P4C fosters collaboration over competition, making it well-suited to ecological education.

Still, because sustainability education inevitably involves the transmission of certain values, P4C dialogue alone may not suffice. As Point and Champoux (2024, p. 11) also note , dialogical approaches must be supported by complementary pedagogical strategies. Projects like EACH help us acknowledge this tension and reflect on how to navigate it with integrity.

prepackaged opinions

Children, like adults, often enter philosophical dialogue with preconceived notions—particularly on highly regulated topics like environmental sustainability.

In one session, children were asked to consider a hypothetical situation: What if the mayor decided to cut down all the trees in their schoolyard? The children immediately disagreed, citing the trees' value for play, shade, and imagination. When prompted to consider further consequences—such as the impact on animals or the production of paper—the conversation suddenly shifted. One girl interjected, "We mustn't waste tissues," prompting a series of similar eco-friendly statements.

In another session, while reflecting on Heraclitus' river metaphor ("Can you step twice into the same river?"), the discussion again veered into moral prescriptions(e.g., not throwing garbage into rivers.) These moments suggested that children were layering philosophical dialogue onto a foundation of pre-learned rules, focusing more on repeating what they had been taught than engaging in authentic reflection.

This raises important questions. Are children genuinely opposed to cutting down trees, or are they simply echoing adult expectations? While these remarks show children have learned valuable lessons, they also reveal a challenge: how to engage children in deeper philosophical reflection without undermining the strengthening of their moral compass. The aim of philosophical dialogue is not to dismantle convictions for the sake of it but to explore the reasons and implications behind them.

the importance of conditions for dialogue

The implementation showed that establishing clear rules and structures proved essential for successful engagement. While these constraints may appear to limit children's freedom of expression—a key value in P4C—they can in fact enable deeper participation. We illustrate this with three examples.

the talking scepter

In one Italian workshop, a "talking scepter" was introduced—a glittery star-topped stick used to manage turn-taking. Whoever held it became the "king" or "queen" of speech and had to be listened to. Although this device imposes a constraint, it promotes listening, silence, and respectful attention.

A telling moment involved a child, R, who had never spoken aloud in class and usually whispered to teachers. During the name round, the other children noted, "But R doesn't speak!" The facilitator gently asked R whether they preferred to whisper or speak aloud. R whispered their name. Later in the session, R raised their hand, received the scepter, and spoke aloud for the first time—eliciting applause and joy from classmates.

This story illustrates how a structured constraint can enable rather than limit participation. While children are never forced to speak, the scepter introduces a rhythm of silence and turn-taking that makes space for more voices to emerge. A similar procedure that had been adopted in Portugal and described by Costa Carvalho & Santos (2017) shows that though introducing a scepter may appear to limit freedom, it also aims to actively involve children in procedures of a P4C session and thus fosters the community of inquiry more generally.

digital tools and prestructured sheets

In sessions involving digital tools, children were asked to use cameras to photograph elements of interest in the schoolyard. In some cases, only one camera was available, which had notable relational and epistemic benefits: children took turns, cooperated, and paid greater attention to what they were photographing. Even when multiple devices were present, children spontaneously managed their

use without adult intervention, showing how digital tools can reinforce democratic behaviors.

In contrast, when similar activities were carried out without cameras, children often collected too many objects without discernment. The camera, though a constraint, helped to focus attention and promote thoughtful selection. In other implementations, children requested teachers to photograph plants or insects they had discovered, reinforcing curiosity and shared inquiry and transferring to other schooling moments what they had learned in the sessions of the project.

Other digital tools, such as Google Earth, served similar purposes—guiding attention and promoting turn-taking. Likewise, the use of prestructured worksheets—such as those used for observing and documenting trees—helped overcome the intimidation of the blank page and encouraged structured sharing of findings.

dialogue is the goal, not the starting point

In P4C, dialogue is not the starting point but the goal. A true community of inquiry, as envisioned by Lipman (2003), involves collaborative thinking, shared inquiry, and the joint pursuit of meaning. However, in early sessions, children often spoke only to the facilitator, rarely responded to peers, and had difficulty staying within the discussion circle. When they did interact, it was often to correct one another, mimicking adult behaviors.

This is entirely normal, especially given that children at this age are just beginning to learn dialogical skills. In the project's ten sessions, we observed how this capacity developed gradually. Some children began to recognize the strength of reasons, enjoyed seeing their photos in presentations, and responded thoughtfully to their peers.

For example, in a photography workshop, children were asked not only to view images but to "experience" them: What does this picture feel like? Is it warm or cold? What does it smell or sound like? Though children's questions were not always present, a particularly poignant moment came when a child on the autism spectrum quietly said: "This picture feels cold." Though brief, such moments

illustrate how the methodology enables participation, even before it has fully matured.

concluding remarks

The themes of climate crisis and sustainability and digital transformation are nowadays, as is well known, at the center not only of our daily lives but also of many scientific debates. In the field of education, the present state of affairs puts forward the central research question: *What should be done?* The project, which is still only half way, has already revealed that its outputs will fruitfully contribute to providing some answers on how to proceed. No doubt P4C will promote a more meaningful education within the digital transformation while continuing to engage the population for a sustainable world. It promises that P4C will be able to help to better face the climate change challenges in its promotion of collaborative thinking processes.

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