

Full-Time High School and Professional Education School: Interdisciplinary Strategies with Agile Methodologies for the Holistic Development of Students

Adna Rodrigues de Alencar¹ <https://orcid.org/0009-0001-2347-4036>; Danielle Taumaturgo Dias Soares² <https://orcid.org/0000-0001-6816-6857>; Emanuelle Grace Kelly Santos de Oliveira³ <https://orcid.org/0009-0005-9269-914X>; Erica Cristina Machado de Melo⁴ <https://orcid.org/0009-0000-3273-2124>; Francisco Ademir Eduardo Freitas⁵ <https://orcid.org/0009-0009-3230-6593>; Francisco José Lopes Cajado⁶ <https://orcid.org/0000-0002-8824-9251>; Irene Mendes Fontes⁷ <https://orcid.org/0009-0002-3152-6649>; José Maria Campos de Oliveira Neto⁸ <https://orcid.org/0009-0001-4097-6791>; Juvanildo Terra de Alencar Junior⁹ <https://orcid.org/0009-0005-0523-9875>; Lilian do Socorro Viana e Viana Amaral¹⁰ <https://orcid.org/0009-0005-7420-4000>; Paulo Henrique Barbosa Sousa¹¹ <https://orcid.org/0009-0007-1269-7860>; Roberto Augusto Caracas Neto¹² <https://orcid.org/0000-0001-8484-411X>; Rickardo Léo Ramos Gomes¹³ <https://orcid.org/0000-0001-6101-9571>; Sana Eteki Mboumema Mane¹⁴ <https://orcid.org/0009-0009-2491-1849>.

¹ Doctorate in Educational Sciences from Universidad del Sol – UNADES; ² Master's Degree in Teaching, specializing in the Teaching of Human and Social Sciences, from the Graduate Program in Teaching - POSENSINO – UERN/UFERSA/IFRN; ³ Master's Degree in Management and Evaluation of Public Education from UFJF/CAED; ⁴ Postgraduate Degree in Strategic People Management from FBUNI University Center; ⁵ Professional Master's Degree (Professional Master's in Climatology and Applications in CPLP Countries and Africa – UECE); ⁶ Ph.D. in Agricultural Biotechnology (RENORBIO – UFC); ⁷ Postgraduate Degree in Criminal Law from Uniateneu University Center; ⁸ Specialist in Management, CEFEB; ⁹ Doctorate in Educational Sciences from Universidad del Sol – UNADES; ¹⁰ Master's Degree in Educational Sciences from Universidad del Sol – UNADES; ¹¹ Ph.D. in Educational Sciences, FCSA (DINTER Program); ¹² Doctoral Student at the Academy of the National Institute of Industrial Property; ¹³ Doctorate in Biological Sciences - FICL; Master's in Phytotechnics - Federal University of Ceará; ¹⁴ Master of Monetary and Financial Economics.

Corresponding Author: Rickardo Léo Ramos Gomes

ABSTRACT

Background: In light of the growing educational demands of the 21st century, full-time high schools and professional education institutions have been seeking pedagogical alternatives that promote a more comprehensive, humanizing education aligned with the needs of the labor market. In this context, interdisciplinary strategies and agile methodologies have emerged as promising approaches to enhance student agency and the construction of meaningful knowledge.

Materials and Methods: This qualitative, bibliographic research was conducted through an interpretative analysis of more than ten scientific articles addressing the same theme.

Results: The findings indicated that the adoption of agile methodologies in the teaching and learning process constitutes an effective strategy to make classes more dynamic, foster student autonomy, and develop key competencies such as problem-solving, teamwork, adaptability, and creativity — skills that are increasingly valued in today's labor market.

Conclusion: The integration of interdisciplinary strategies and agile methodologies proves to be an effective pedagogical practice for promoting the holistic development of students in full-time high schools and professional education institutions, offering innovative responses to contemporary educational challenges.

Keywords: *Interdisciplinary strategies; Agile methodologies; Holistic development; Professional education.*

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I. INTRODUCTION

In recent decades, the educational landscape in Brazil has undergone significant changes, driven by public policies aimed at promoting a more inclusive, holistic, and responsive education aligned with the current demands of society. Within this context, full-time high school education and professional training have emerged as paradigms not only intended to improve educational performance indicators, but also to foster the holistic development of students—understood as the cultivation of cognitive, socio-emotional, ethical, and technical skills.

The growing emphasis on innovative methodologies and interdisciplinary approaches in school settings highlights the urgent need to reassess conventional pedagogical practices and to implement strategies that engage with the complexity of contemporary educational realities. The integration of interdisciplinary practices with agile methodologies in professional and full-time secondary education appears as a promising alternative for reconfiguring educational processes, as it promotes meaningful, collaborative, and context-based learning experiences. Interdisciplinarity contributes to overcoming the fragmentation of knowledge, while agile methodologies—by fostering autonomy, creativity, and problem-solving—bring students closer to the dynamics of both the labor market and social life.

Given the convergence of these objectives, it becomes essential to examine how these strategies can be integrated to enhance pedagogical approaches aimed at the holistic development of individuals. The present study adopted a qualitative approach, characterized as interpretative and exploratory, and was guided by a bibliographic review based on scientific articles published in recent years. This methodological path was selected to identify, systematize, and interpret the main theoretical and empirical frameworks that address the interrelation between interdisciplinary practices, agile methodologies, and holistic education. The contributions of authors such as Gomes et al. (2024), Alexandre and Borin Da Cunha (2023), and Rocha (2020) played a fundamental role in shaping the analytical framework of the investigation, enabling a critical and context-sensitive reflection on the topic.

The general objective of this study is to investigate how the articulation between interdisciplinary strategies and agile methodologies can contribute to the holistic development of students in full-time high schools and professional education institutions. To this end, the following specific scientific objectives were defined: To analyze how interdisciplinary practices are developed in the context of full-time and professional education, considering their contribution to a broader and more humanizing educational experience; To propose the application of agile methodologies within the scope of full-time and professional education; To understand how the integration of interdisciplinary strategies in full-time education and agile methodologies in professional education enhances students' holistic development.

This article is structured into four sections. The first section—this introduction—presents the contextualization of the topic, the methodological path followed, and the research objectives. The second section outlines the materials and methods employed in the study. Next, the theoretical framework discusses key concepts and scholarly contributions related to the subject. Finally, the conclusion section presents the final considerations, highlighting the main findings of the research and suggesting directions for future studies.

II. MATERIAL AND METHODS

This investigation adopted a qualitative approach, which is characterized by examining and interpreting social phenomena in their natural contexts, emphasizing the complexity of human and educational interactions (Lösch, Rambo, & Ferreira, 2023).

Exploratory in character and interpretative in nature, the research aimed to understand how interdisciplinary strategies in Full-Time High School Education, combined with agile methodologies in Professional Education, support the holistic development of students. The choice of this approach is grounded in the intent to comprehensively explore the meanings and significance attributed to educational practices within the analyzed context.

This study is bibliographic in nature, based on the collection, reading, and analysis of more than ten scientific articles published in national and international journals over the past five years, addressing the theme of holistic education in relation to full-time education and professional training. According to Gerhardt and Silveira (2009) and Gil (1999), this type of research involves the analysis of previously published theoretical contributions, allowing the researcher to identify, systematize, and interpret the main theoretical frameworks that underpin a specific field of knowledge.

The selection of the bibliographic corpus was guided by criteria of relevance, currency, and alignment with the central theme of the study. The texts were retrieved through searches in databases such as SciELO,

Google Scholar, and CAPES journals, using descriptors such as “holistic education,” “full-time high school,” “professional education,” and “agile methodologies.” The evaluation of materials followed an interpretative logic, aiming to highlight convergences and tensions among the theoretical frameworks and educational models analyzed, with a particular focus on contributions that address the interrelationship between innovative pedagogical practices and the promotion of students’ holistic development.

Among the authors reviewed, three stood out for their notable contributions to the analytical foundation of this investigation. Gomes et al. (2024) present an updated perspective on the connection between holistic education and emancipatory formative practices, emphasizing the importance of interdisciplinarity in modern education. Alexandre and Borin Da Cunha (2023) provide an in-depth discussion of the interaction between active methodologies and professional education curricula, highlighting their effectiveness in shaping autonomous individuals. Rocha (2020) offers critical reflections on the role of public policies and educational administration in the implementation of pedagogical proposals aligned with holistic education. These three authors formed the structural basis of the theoretical analysis in this study.

III. LITERATURE REVIEW

3.1 Full-Time Education and Interdisciplinarity: Educational Practices for the Expanded Development of Students

According to Silva (2024), the formulation of public policies aimed at secondary education experienced exponential growth between the 1990s and the early 21st century. This advancement reflects a clear governmental concern with this critical stage of Basic Education. In this context, multilateral organizations such as the World Bank, the United Nations Children's Fund (UNICEF), and the Organisation for Economic Co-operation and Development (OECD) have played a significant role in promoting educational guidelines aligned with market demands and corporate expectations. These institutions advocate for an education shaped by directives that seek to prepare professionals capable of responding to the challenges posed by capitalism and global transformations. It is observed that, while responding to economic and social changes, these organizations maintain consistency in the development of public policies aimed at preparing a skilled workforce for strategic sectors and enhancing competitiveness in the business market.

The demand for the implementation of full-time secondary education in Brazil is aimed at promoting students' holistic development through pedagogical approaches that address not only curricular content but also ethical, social, and emotional aspects related to human development. In this scenario, interdisciplinarity emerges as a fundamental approach to overcoming the fragmentation of knowledge, enabling different areas of knowledge to interact in a coherent and integrated manner (Santos, Gonçalves, & Paludo, 2018). The connection between curricular components and integrative projects allows students to understand complex phenomena and develop diverse competencies, thus fostering meaningful and human-centered learning.

The interdisciplinary activities implemented in Professional Education Schools with extended school hours have contributed to strengthening a contextualized education that is responsive to students’ realities. As highlighted by Santos et al. (2018), the articulation between technical and general education subjects promotes the development of knowledge that meets labor market demands without neglecting civic education. This approach, however, requires collaborative teaching practices and a pedagogical management committed to experimenting with innovative methodologies. Within this context, the implementation of active learning methodologies has stood out as a pedagogical strategy to foster students' autonomy and protagonism (Gomes et al., 2024).

Table 1 – Interdisciplinary Strategies in Full-Time Education and Their Contribution to Holistic Student Development

Interdisciplinary Strategy	Description	Contributions to Holistic Development
Integrative Projects	Integration of diverse content around a common theme.	Encourages systemic thinking, problem-solving, and teamwork.
Active Methodologies	Approaches such as project-based learning and flipped classroom.	Promote student protagonism, autonomy, and motivation.

Coordination between Technical and General Subjects	Joint planning among teachers from different subject areas.	Fosters contextualization and practical application of knowledge.
Interdisciplinary Formative Assessments	Instruments that consider multiple areas of knowledge and skills.	Stimulate critical reflection and self-assessment.
Interdisciplinary Extracurricular Workshops and Activities	Practical activities with transversal themes (citizenship, ethics, sustainability).	Broaden cultural repertoire and promote humanistic values.

Source: Machado, & Zanella (2023); Gomes et al. (2024)

Interdisciplinarity within the context of full-time education is realized through the integration of knowledge, practices, and educational experiences that have the potential to transcend the traditional content-focused model of schooling. As emphasized by Santos and Tavares (2021), the effectiveness of these practices is contingent upon the intentionality of pedagogical projects and the appreciation of school culture, enabling a comprehensive approach that acknowledges the complexity of the individuals involved. In this perspective, the holistic development of students also requires the design of a flexible curriculum that fosters the integration of theory and practice, while broadening horizons for critical understanding and transformative action within society.

Field lessons can serve as highly valuable didactic resources for the teaching and learning processes of students, as they offer a playful, interdisciplinary, and practical approach to working with content covered in the classroom. Dias (2016) reflects on this topic,

[...] asserting that field lessons possess a multidisciplinary, integrative, and dynamic character due to their direct and expansive mode of learning. Furthermore, they enable critical and analytical engagement with topics related to human rights, citizenship, and diversity, establishing a connection between students and real-world contexts, rather than limiting them to the textbook (p. 180).

This does not negate the importance of the classroom; rather, field lessons serve as a complementary strategy contributing to the success of formal education practices.

To this end, it is essential to consider the distinct stages of field lessons: the **pre-field phase**, during which preparatory lessons and the objectives of the activity are presented; and the **field phase** itself, which takes place in a non-formal educational space and involves the practical application of acquired knowledge.

When field lessons are used as pedagogical tools within the framework of comprehensive education, they help students develop a greater appreciation for the spaces they inhabit, fostering an understanding of how the functionality of these spaces can enhance both their environment and their learning.

Dias (2016) highlights that:

Field lessons promote collaborative work, which is strengthened when the school employs group-based, participatory activities. These offer numerous advantages that are often absent in individual learning environments. This is because the constitution of subjects—as well as their learning and thought processes—occurs through mediation and interaction with peers (p. 178).

This affirmation by Dias significantly aligns with the findings proposed in the present study. From this perspective, it becomes clear that in order to successfully conduct a field lesson, the teacher must establish clear pedagogical and educational objectives, which demands adequate preparation.

According to Dias (2016, p. 179):

Organizing a field lesson requires time, involvement, and commitment. It is no easy task to take 40 students outside the confines of the school into natural environments, for instance. However, when well-planned, a field lesson becomes a powerful source of interaction, integration, scientific development, and meaningful learning (p. 179).

The teacher must be well-acquainted with the site to be visited or rely on the support of trained guides or monitors in the relevant area. This area must be defined spatially and physically to meet the learning objectives and ensure relevance.

The PCNEM (National Curriculum Parameters for Secondary Education) (2001) highlight that:

Meaningful learning presupposes a referential framework that allows students to both identify and relate to the proposed issues. This approach does not imply remaining at the level of immediate context or common sense. Instead, it aims to foster the ability to understand and intervene in reality from an autonomous and emancipatory perspective. When proposing a way of organizing the curriculum through an interdisciplinary

and contextualized approach, it is assumed that all meaningful learning involves a subject-object relationship. For this to be actualized, the conditions must be in place for both poles of the process to interact (p. 36).

In field lessons, the teacher must abandon the traditional role of “content transmitter” and instead act as a researcher and motivator. The student transitions from a passive recipient to an active participant in the learning process.

As Freire (2013) affirms: “Teaching is not the act of transferring knowledge. It must not only be understood by the teacher and students in its ontological, political, ethical, epistemological, and pedagogical dimensions, but also constantly experienced and witnessed (p. 27)”.

A field lesson is not a simple activity. It requires careful planning on the part of the teacher(s) involved, along with the support of the entire school community—from the administrative leadership to the main agents of the process, the students.

Silva, Araújo, & Barbosa (2016) emphasizes that:

When conducted with dedication, educational practices involving field lessons represent a break from traditional classroom activities, contributing to a deeper understanding of the content covered in class and promoting student development in social, intellectual, and emotional domains, resulting in memorable learning experiences (p. 70).

Without this comprehensive involvement—from the selection of the field lesson topic to the achievement of its objectives—there is a risk that the activity will merely be perceived as a “different kind of lesson,” failing to achieve the intended learning outcomes and falling short of the civic awareness it seeks to foster.

As Dias (2016) explains:

In the field, the four walls of the classroom fall away, and the teacher becomes a mediator of the pedagogical action. At this moment, there is no longer the one who teaches, but rather those who learn together, side by side, overcoming hierarchies and fostering moments of exchange and constructive conflict (p. 179).

Field lessons may serve as the core theme of a uni- or interdisciplinary project or function as one component within a broader project not primarily focused on field research. There is no single method to be followed; rather, a set of conditions must be carefully planned. These include: identifying a topic, either suggested by the teacher or agreed upon by the students; establishing objectives and goals; recording successes and mistakes to guide decision-making throughout the project; and concluding the research with a presentation, report, or any other expressive format.

Field activities are effective means of developing competencies highly valued by society for the formation of more conscious citizens who are better equipped to confront emerging global challenges and committed to preserving natural resources.

As Dias (2016) notes: “When the group fully understands the objectives of the field lesson and develops an awareness of each individual’s potential, they begin to critically perceive both the space and the educational contributions of their peers (p. 178)”.

It is also important to highlight the essential role of **contextualization** in field activities. Contextualization refers to real and practical situations in which theoretically studied content—typically covered in traditional lectures—can be effectively connected to real-life experiences. Field lessons thus serve as a highly effective methodology for bridging the “theoretical world” and the “real world.” Although this connection may seem straightforward, it is often overlooked, resulting in missed opportunities for more contextualized learning experiences.

3.2 Agile Methodologies in Full-Time Education and Vocational Training: Pedagogical Innovation and Competency Development

Agile methodologies have emerged as innovative pedagogical approaches capable of transforming the dynamics of full-time education and vocational training by fostering student-centered, collaborative learning oriented toward specific goals. When implemented in these contexts, such methodologies contribute to the development of both socioemotional and technical skills aligned with the demands of the 21st century.

According to Santos (2024), Agile Methodologies are defined as approaches originally developed for software development and project management. These methodologies are designed to accommodate the dynamic and often unpredictable nature of software creation. Their focus lies in emphasizing flexibility, collaboration, and incremental deliveries, thereby enabling a rapid and efficient response to changes in project requirements and conditions.

As observed by Gomes et al. (2024), active and agile methodologies foster teacher autonomy and student engagement, enabling a more fluid, meaningful, and adaptable learning process across diverse educational settings. The implementation of strategies such as flipped classrooms, game-based learning, project-based learning, and the use of graphic organizers facilitates the creation of dynamic and varied learning environments.

Table 2 – Agile Methodologies Applicable to Full-Time Education and Professional Education

Agile Methodology	Description	Skills Developed
Flipped Classroom	Students access content in advance and use classroom time to solve problems.	Autonomy, critical thinking, time management.
Game-Based Learning	Use of digital or analog games to mediate the teaching-learning process.	Problem-solving, decision-making, logical reasoning.
Project-Based Learning	Development of interdisciplinary projects based on real-life problem situations.	Teamwork, leadership, creativity, planning.
Role-Playing & Role Reversal	Simulations of real-life situations with role reversal to stimulate empathy and reflection.	Communication, empathy, emotional regulation.
Graphic Organizers	Diagrams and visual schemes that aid in organizing and understanding content.	Synthesis, analysis, thought organization, idea visualization.

Source: Abeditehrani et al. (2021); Alexandre & Borin da Cunha (2023); Gomes et al. (2024)

Alexandre and Borin da Cunha (2023) emphasize the effectiveness of the flipped classroom methodology in facilitating more autonomous learning, while Rocha and Cabral Neto (2022) highlight how the use of educational games can enhance the teaching of complex content, such as quantum numbers, making the learning process more engaging and captivating. Furthermore, according to Estrela et al. (2022), graphic organizers play a crucial role in organizing logical reasoning and enhancing students' ability to synthesize information.

A key aspect of agile methodologies lies in their ability to stimulate collaboration, problem-solving, and decision-making in real-world scenarios, which directly fosters the development of professional competencies. Machado and Zanella (2023) emphasize that the intentional and practical integration of the concept of competence into the curriculum drives the improvement of cognitive, social, and technical skills in alignment with the challenges of the labor market. Thus, by incorporating these methodologies into professional education and integrated learning environments, it becomes possible to effectively bridge theory and practice in a manner suited to the context.

Moreover, the application of simulations and dramatizations, such as role reversal and role-playing games, can significantly contribute to the enhancement of socio-emotional competencies, particularly with regard to empathy and understanding others. Abeditehrani et al. (2021) highlight the advantages of these practices in overcoming psychological and social barriers, demonstrating their importance not only in therapeutic contexts but also in educational settings that promote the holistic development of students. In summary, the implementation of agile methodologies in comprehensive education and professional training emerges as a promising approach for pedagogical innovation, as well as for the development of critical, creative, and socially engaged individuals.

Silva (2024) emphasizes that the combination of these practices with internships in companies and participation in events organized by institutes and foundations aims to form a skilled workforce in Integrated Secondary Education and Professional Education, exemplified by the Dupla Escola Program, developed in the State of Rio de Janeiro in partnership with companies and institutions since 2007/2008. This program has garnered significant recognition for the training it provides and for the execution of public policies aimed at youth, as evidenced in the following excerpt:

The involvement of the business sector, through its institutes and foundations, in the schooling of young people has proven to be highly beneficial for this sector and an important instrument for differentiating social classes, organizing society and access to the benefits of social wealth, among which education stands out (Silva, 2024, p. 06).

However, Santos (2024), in his research at the Production Engineering course at the State University of Maranhão (UEMA), reveals that 77.5% of students perceive a significant gap in the teaching of project

management and agile methodologies in the UEMA Production Engineering program. Another relevant finding is the low engagement of students in practical activities related to the topic, such as projects or specific studies. Furthermore, half of the survey participants stated that they do not attend lectures or scientific events related to this field of knowledge.

3.3 Holistic Student Education in Perspective: The Potential Convergence between Integral Education and Professional Education

The holistic education of students, as guided by current public policies, has been understood as a process that goes beyond the cognitive dimension, encompassing ethical, aesthetic, political, and cultural elements. In this context, integral education plays a fundamental role by suggesting an expansion of both time and space within the school environment, which fosters the comprehensive development of individuals. Parente (2018) examines the policy of full-time integral education through the lens of the public policy cycle, emphasizing the importance of the integration between conception, formulation, and implementation to ensure that these policies genuinely contribute to the formation of citizens who are both critical and socially engaged. The connection with professional education emerges, in this context, as a complementary strategy, capable of enhancing holistic education through the development of technical skills combined with interpersonal competencies.

Appio, Ewald, and Silva (2020) emphasize that by presenting professional education as a fundamental element in integral education, it is possible to overcome the divide between work and education, promoting the integration of knowledge into a liberating formative practice. The convergence of interdisciplinary approaches and active methodologies, particularly those based on agile methodologies, thus represents a promising alternative for creating educational experiences that foster autonomy and critical capacity.

Santos (2024) concludes in his research on agile methodologies in professional education that, in the case of the UEMA Production Engineering course, the results indicate the urgent need to improve the practical training of students, promoting a more effective integration of project management education and agile methodologies into the curriculum. This action is essential to align academic training with market demands and to prepare students for professional challenges in a more solid and qualified manner.

Table 3 - Dimensions of Holistic Education in the Context of the Integration between Integral Education and Professional Education

Formative Dimension	Contribution of Full-Time Education	Contribution of Professional Education
Cognitive	Curriculum expansion and interdisciplinarity	Development of specific technical skills
Ethical and Citizenship	Collective experiences and social actions	Integration with the world of work in a critical manner
Aesthetic and Cultural	Interdisciplinary projects and appreciation of diversity	Contextualized and creative pedagogical practices
Technical and Technological	Openness to the use of new technologies in educational contexts	Practical application of knowledge in professional environments

Source: Parente (2018); Appio, Ewald, & Silva (2020); Ortigara (2021).

The role of the Federal Institutes, as emphasized by Ortigara (2021), highlights this convergence by linking basic education with professional education, suggesting curricula that encompass both technical and humanistic training. These experiences demonstrate the effectiveness of educational models that do not separate professional training from citizenship education, proving that schools can serve as environments for the development of life projects and social intervention, especially when grounded in interdisciplinarity and pedagogical innovation.

From the critical perspective of Foucauldian analysis, Fuini (2021) emphasizes that professional education, traditionally characterized by control and normalization mechanisms, can be reconfigured when connected to the logic of integral education. The adoption of agile methodologies and participatory pedagogical approaches could assist in transgressing established power relations, repositioning individuals as protagonists of their learning and social integration. Thus, the convergence between integral education and professional training is not limited to a merely instrumental association, but can constitute an educational proposal aimed at transformation and liberation.

IV. DISCUSSION AND CONCLUSION

The primary objective of the present study was to analyze how the integration between interdisciplinary approaches and agile methodologies can promote the holistic development of students in full-time secondary education institutions and vocational education schools. Based on a bibliographic and interpretative evaluation of more than ten scientific studies on the subject, it is inferred that all the established objectives were fully achieved.

Theoretical investigation made it possible to understand that interdisciplinary practices, when truly incorporated into the curriculum and pedagogical routine, foster more relevant and analytical learning, aligned with students' realities. In this context, interdisciplinarity emerges as a fundamental component to transcend the fragmentation of knowledge and promote the development of comprehensive skills, encompassing both cognitive and socioemotional dimensions. Furthermore, the adoption of agile methodologies in the teaching and learning process proves to be an effective strategy to make classes more dynamic, promote student autonomy, and cultivate competencies such as problem-solving, teamwork, adaptability, and creativity—traits increasingly valued in today's labor market.

The theoretical framework presented throughout the article, supported by authors such as Gomes et al. (2024), Alexandre and Borin Da Cunha (2023), and Rocha (2020), highlights that a viable and desirable convergence exists between full-time secondary education and vocational education initiatives, provided that pedagogical intentionality underlies the integration of knowledge, practices, and methodologies. This convergence enhances integral education, which is understood as one that encompasses the individual as a whole, promoting not only technical proficiency but also ethical, civic, and human development.

As a proposal for future research, it is suggested that further empirical studies analyze concrete experiences of articulation between full-time education and vocational training through the application of agile methodologies, particularly within public education institutions. Moreover, it would be pertinent to investigate how both initial and continuing teacher education may influence the implementation of sustainable interdisciplinary practices aligned with the principles of integral education. Such investigations may contribute to the improvement of educational public policies and to the development of more inclusive, innovative, and transformative pedagogical models.

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