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Administrative And Legal Framework for Transforming the Content and Forms of Education Under the Pressure of the COVID-19 Pandemic in The Context of Sustainable Development

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Abstract

The main purpose of the article is to present the key principles of the administrative and legal nature of the influence on the transformation of the content and form of education in the context of the COVID-19 pandemic. The object of the study is to highlight the most significant administrative and legal factors influencing the transformation of the content and forms of education under the pressure of the COVID-19 pandemic. The research methodology involves the use of the IDEF0 method. As a result of the analysis, a model of IDEF0 functioning was presented. The innovativeness of the results obtained is revealed through the presented methodological approach to modeling changes in the transformation of the content and forms of education under the pressure of the pandemic. The study is limited by considering only administrative and legal methods of transformation. Future research prospects aim to expand and take into account the post-pandemic environment.

Keywords: *Administrative Law, Administrative Legal Framework, Education, Pandemic, Content of Education, Transformation, Pedagogy*

INTRODUCTION

The administrative and legal framework surrounding education urgently requires transformation due to the immense pressures exerted by the COVID-19 pandemic, particularly within the context of sustainable development. This transformation is necessary to address the immediate challenges posed by sudden shifts to online and remote learning systems. Such a transition exposed significant inadequacies in the existing educational frameworks, which were predominantly designed for traditional, in-person learning environments. There is a pressing need for legal and administrative adaptations that can fully support digital learning platforms, ensuring that educational institutions can continue to function effectively despite physical restrictions. Moreover, the pandemic underscored profound disparities in access to educational resources, highlighting the digital divide between different socio-economic groups. Many students lacked access to reliable internet and digital devices, which are crucial for participating in online education. This situation called for urgent policy interventions to ensure equitable access to technology and internet services. By updating legal frameworks to mandate and facilitate such access, educational equity can be significantly enhanced, aligning with the sustainable development goal of inclusive and equitable quality education for all.

Educational content and delivery methods also require substantial updates to meet the needs of a rapidly changing world. The pandemic has shown that educational systems need to be flexible and resilient, capable of adapting to unexpected challenges. This includes integrating critical 21st-century skills such as digital literacy, problem-solving, and adaptability into curricula. Legal and administrative policies must support these curricular

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changes, ensuring that education systems not only recover from the pandemic but also become more robust and adaptable to future crises.

Sustainability in education—encompassing environmental, social, and economic pillars—has also become a critical focus. The pandemic has prompted a rethinking of how education systems can contribute to sustainable development. This involves promoting education for sustainable development (ESD) in school curricula, encouraging students to engage with concepts such as climate change, resource conservation, and sustainable living practices. Legal frameworks need to be enhanced to embed these principles into educational standards and practices, thereby fostering a generation that is well-equipped to deal with the challenges of sustainable development.

Assessment and evaluation methods in education have also been challenged by the shift to online learning. Traditional examination methods are often incompatible with remote learning environments, necessitating innovative assessment strategies that are valid, reliable, and fair. Legislative updates are required to allow for alternative assessment methods, such as project-based assessments, open-book examinations, and continuous assessment strategies. These changes can help maintain the integrity and credibility of educational qualifications in a post-pandemic world.

Finally, international cooperation and harmonization of educational standards and policies have become more important than ever. The pandemic has demonstrated that challenges to education are global in nature, requiring collaborative solutions. Enhancing legal frameworks to support international educational cooperation—such as credit recognition, online learning platforms, and joint educational programs—can foster a more interconnected and supportive global educational landscape. This approach not only aids in the rapid dissemination of best practices but also enhances the global mobility and employability of students across borders, contributing to the broader goals of sustainable development.

LITERATURE REVIEW

This chapter reviews pertinent literature that informs the ongoing transformation of educational content and forms under the duress of the COVID-19 pandemic, viewed through the lens of sustainable development. The reviewed works range across diverse aspects including environmental protection, digital transformation, lifelong learning, anti-corruption measures, environmental literacy, and the socio-economic impacts of global digitalization.

Sokac et al. (2021) discuss a data science framework tailored for environmental protection education, emphasizing the role of emerging technologies in enhancing learning outcomes in environmental science. Their research, presented at the 2021 IEEE Global Engineering Education Conference, advocates for the integration of data science in educational curriculums to better equip students with the skills needed to address environmental challenges effectively.

Tadena and Salic-Hairulla (2021) contribute to this discussion by presenting a localized education model that integrates environmental education within the study of the hydrologic cycle through STEM approaches. This model aims to foster a deeper understanding of environmental dynamics among students, enhancing their ability to contribute to sustainable practices.

The review by Ramadania et al. (2024) offers an exhaustive look at how digital transformation influences organizational performance in higher education. Their systematic review highlights the critical role of digital infrastructure in enhancing the responsiveness of educational institutions to crises such as the COVID-19 pandemic.

Khovrak et al. (2022) explore the management of lifelong education projects that support sustainable development. They argue for the continuous adaptation of educational programs to lifelong learning paradigms, ensuring that all age groups are equipped with the necessary skills to contribute to sustainable development .

Huang and Hsin (2023) delve into the intersections of environmental literacy and sustainable development, emphasizing the role of effective teaching strategies in disseminating these concepts within schools. Their

findings suggest that well-implemented environmental education can significantly elevate students' understanding and engagement with sustainability issues .

Kopytko and Sylkin (2023) examine the modeling of information support systems as a means to combat corruption within economic security management. Their work implicates the importance of transparent and corruption-free educational practices in maintaining the integrity of educational systems, particularly in a digital age .

Alazzam et al. (2023) address the development of information models for e-commerce platforms, reflecting on the broader socio-economic systems in the age of global digitalization. Their study underlines the necessity for educational systems to adapt to the realities of a digitally interconnected world, ensuring that legal frameworks keep pace with technological advancements and the need for digital literacy .

de Pontes et al. (2022) assess the effectiveness of environmental education programs used as licensing tools for port-related enterprises in Brazil. Their research provides insights into how effectively educational programs can be structured to meet both educational and environmental regulatory requirements, suggesting a model for integrating educational goals with broader societal needs .

Sylkin et al. (2018) discuss the financial security of engineering enterprises, offering a perspective on how educational frameworks can incorporate anti-crisis management skills that are crucial in economic downturns. This approach suggests that education should not only address immediate professional skills but also broader economic and crisis management capabilities . Finally, Xie et al. (2023) investigate the impact of executives' pro-environmental education on eco-friendly agricultural production in China. Their study highlights the importance of integrating sustainability education at the highest levels of corporate training, influencing organizational practices and outputs in significant ways .

Each of these studies contributes to a comprehensive understanding of how educational systems can be dynamically transformed to meet the challenges of the COVID-19 pandemic while aligning closely with sustainable development goals.

METHODOLOGY

The research employs the IDEF0 (Integration Definition for Function Modeling) method, a structured approach originally designed for modeling the decisions, actions, and activities of an organization or system. IDEF0 is used here to develop a comprehensive model that captures the administrative and legal processes influencing educational transformations. This method is particularly suited to this study as it allows for a clear, visual representation of complex processes, facilitating an understanding of how various components interact within the broader system. Using the IDEF0 method, a functional model was created to depict the processes through which administrative and legal frameworks affect educational practices. The model includes various nodes representing specific actions or decisions, linked by arrows that illustrate the flow of information and control. These nodes and their interconnections are designed to highlight critical areas where administrative decisions or legal regulations have played a decisive role in transforming educational content and methods. The novelty of this research lies in its methodological approach—applying the IDEF0 method to the field of education policy analysis, which is traditionally dominated by qualitative and descriptive studies. By employing a structured, systems engineering tool, this study introduces a new dimension to understanding the dynamics of policy impact on education systems, particularly under crisis conditions like those presented by the COVID-19 pandemic.

RESULTS

Let's build the first IDEF0 model, for this there are the following steps:

A1. Extensive Stakeholder Engagement. After identifying the gaps in the legal framework, the next step involves engaging with a broad spectrum of stakeholders. This engagement goes beyond simple consultations, aiming to actively involve educators, students, tech developers, and parents in the policy-making process. By fostering

a collaborative environment, this stage gathers diverse perspectives and experiences, enriching the development process with practical insights and innovative ideas that reflect the actual needs and challenges faced by the educational community.

A2. Legislative Development and Enhancement. Armed with comprehensive feedback and a clear understanding of required changes, this stage focuses on drafting or amending legislation to incorporate robust support for digital education. New legal provisions need to address critical aspects such as accessibility, content quality, teacher training, and infrastructure requirements, while also ensuring strong data protection and cybersecurity measures are in place. This stage transforms theoretical adjustments into tangible legal documents that guide and govern the deployment of educational technology.

A3. Pilot Program Implementation. Implementing pilot programs is the fourth stage, serving as a crucial testing ground for the newly developed or revised policies. These pilots should be strategically placed in diverse educational settings to evaluate the practical implications of legal changes and gather data on their effectiveness. This stage allows policymakers to observe the real-world impacts of their legal frameworks, providing an opportunity to identify unforeseen issues and make necessary adjustments before a wider rollout.

A4. National Rollout and Continuous Evaluation. The final stage involves scaling the successful aspects of the pilot programs into a national rollout. This extensive deployment should be accompanied by ongoing monitoring and evaluation mechanisms to continually assess the effectiveness of the new legal frameworks. Feedback loops should be established to ensure that the policies remain responsive to the evolving needs of the educational sector. This stage ensures that the legal framework not only adapts to the immediate challenges but also remains flexible enough to accommodate future educational innovations and crises (Fig.1).

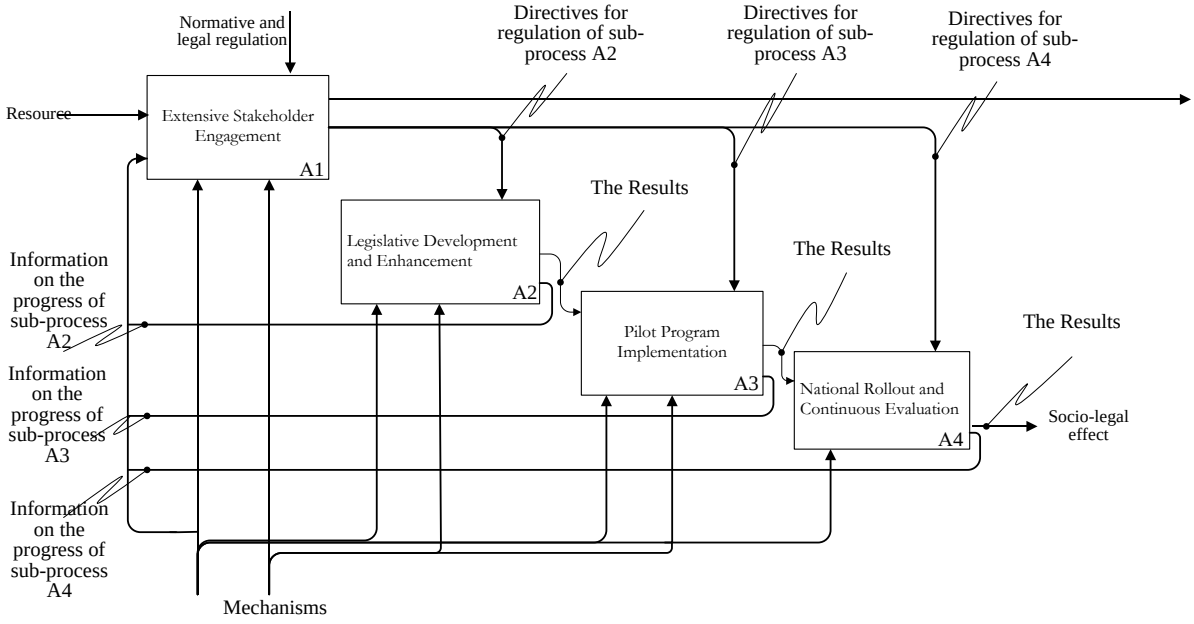

Figure 1. The first functional model IDEF0 for improving the administrative and legal framework for transforming education in the context of sustainable development.

Let's build the second IDEF0 model, for this there are the following steps:

A1. Sustainability Integration. The first stage of this approach involves integrating principles of sustainability directly into the educational legal framework. This requires revisiting and revising current educational standards to include explicit objectives for sustainable development, such as environmental literacy, social responsibility, and economic stability within educational content. It's crucial that these new legal requirements encourage schools to incorporate these themes across all levels of education. This integration ensures that as educational

content and forms transform under crisis conditions like the COVID-19 pandemic, they inherently support broader sustainable development goals.

A2.Policy Framework Enhancement. With insights from the inclusivity audits, this stage develops enhancements to the policy framework that explicitly address and support both sustainability and inclusivity. This includes crafting policies that ensure all educational institutions have the necessary resources and guidance to implement sustainable and inclusive practices effectively. These enhancements might involve financial support, training for educators on inclusivity and sustainability, and infrastructure improvements that facilitate equitable access to high-quality education.

A3. Regional Trials and Stakeholder Feedback. Before a full national implementation, the updated policies are initially rolled out as regional trials. This controlled approach allows for close monitoring and collection of qualitative and quantitative feedback from a diverse array of stakeholders including students, teachers, parents, and local governments. These trials are essential for testing the practicality of the legal modifications and for identifying any region-specific challenges or opportunities. Feedback from these trials is used to refine the policies further, ensuring they are as effective and inclusive as possible.

A4. Full-Scale Implementation and Continuous Improvement. In the final stage, the refined policies are implemented across the national educational system. This rollout is supported by ongoing training programs, resource distribution, and continuous monitoring to ensure the policies are being enacted as intended and are delivering the desired impact on educational sustainability and inclusivity. An integral part of this stage is the establishment of a continuous improvement process, where feedback mechanisms are embedded within the educational system to continually adapt and refine the legal framework in response to new challenges or opportunities. This ensures that the educational system remains responsive and resilient, capable of supporting sustainable development and inclusivity well into the future. (Fig.2).

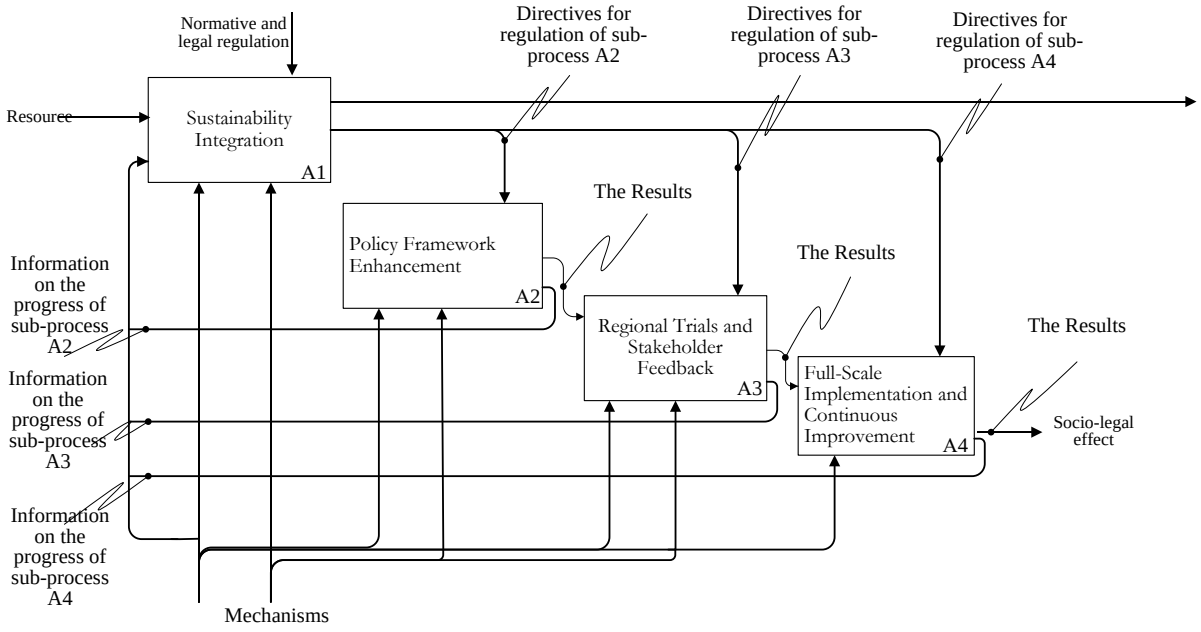

Figure 2. The second functional model IDEF0 for improving the administrative and legal framework for transforming education in the context of sustainable development

In conclusion, the choice between these two approaches depends on the immediate needs and long-term goals of the educational system. If the priority is to address technological gaps and ensure the continuity of education through digital means, then Approach 1 is more suitable. On the other hand, if the goal is to build a more equitable, inclusive, and sustainable educational framework that prepares students for future challenges,

Approach 2 would be better. Ideally, a combination of both approaches would provide a comprehensive strategy to not only manage the current crisis but also enhance the overall resilience and sustainability of the educational system.

DISCUSSION

The study outlined in this article employs the IDEF0 method to model the impact of administrative and legal frameworks on the transformation of educational content and forms under the stress of the COVID-19 pandemic. This section compares the findings of this study with several other scholarly works that also explore systemic transformations but in different contexts such as environmental management, business strategy development, and e-commerce innovation.

Alazzam et al. (2023) investigate the state management of environmental systems in the context of commercial bioeconomy development. Similar to this study's emphasis on administrative and legal influences, their work also underscores the critical role of state-led frameworks in managing and guiding the bioeconomy. However, while Alazzam et al. focus on ecological aspects, our study is centered on educational transformations, showcasing how different domains apply similar administrative principles to guide systemic changes.

In another relevant study, Alazzam et al. (2024) detail a methodical approach to business management strategy selection amidst changes in commercial activities. This approach resonates with our use of the IDEF0 method in that both studies aim to provide structured, actionable frameworks to manage systemic transformations. While Alazzam et al. focus on commercial strategy, our study applies similar structured methodologies to educational settings, suggesting a cross-disciplinary applicability of such frameworks.

The development of an innovative e-commerce model discussed by Alazzam et al. (2023) in ensuring business economic security parallels our educational focus. Both studies emphasize the need for innovative models to adapt to new realities—our study in the context of a pandemic-induced educational transformation, and the Alazzam study in the realm of e-commerce under economic pressures. Both recognize the transformative power of well-designed administrative and legal structures in navigating crises.

Saleh et al. (2020) explore legal management of cryptocurrency assets, highlighting the evolving nature of legal frameworks in emerging financial technologies. This aligns with our discussion on the necessity for educational legal frameworks to evolve in response to pandemic pressures. Both areas require dynamic legal responses to effectively manage and integrate new systems and technologies within established frameworks.

Alazzam et al.'s (2023) study on electronic contracts using blockchain technology offers insights into how emerging technologies can be integrated into traditional systems through innovative legal approaches. Similarly, our study suggests that educational systems need innovative legal adaptations to incorporate new teaching and learning modalities introduced during the pandemic.

Lastly, the works by Akimova et al. (2020) and Kostiukevych et al. (2020) provide a broader perspective on adaptive management in entrepreneurship and the effects of integration processes on institutional maturity, respectively. These studies complement our findings by demonstrating how systemic adaptations are necessary across various sectors to enhance resource planning and investment potential under changing conditions.

In conclusion, the comparative analysis reveals that while the specific contexts and objectives may differ, the core principle of using structured, adaptive administrative and legal frameworks to guide systemic transformations remains universally applicable. These comparisons not only validate the methodologies used in our study but also highlight the potential for interdisciplinary learning and application of such frameworks to enhance systemic resilience and adaptability in various sectors, including education.

CONCLUSION AND RECOMMENDATION

This article has examined the administrative and legal frameworks governing the transformation of educational content and forms under the pressures exerted by the COVID-19 pandemic, specifically through the lens of sustainable development. By employing the IDEF0 method, a structured analysis provided a clear, detailed model of how these frameworks interact and influence educational systems during crisis periods. The research

confirmed that administrative and legal factors play a critical role in shaping how education systems respond to crises. The pandemic necessitated rapid and significant transformations in educational content and delivery methods, which were heavily guided by existing and newly implemented policies and regulations. These changes were crucial in ensuring that education could continue effectively despite severe disruptions.

The application of the IDEF0 method in this context demonstrated its effectiveness in dissecting and representing the complex processes involved in educational transformation. The model effectively highlighted the flow of decisions and actions, providing a visual representation of the influence paths between administrative/legal changes and educational practices. This approach proved invaluable in understanding the dynamics at play and can serve as a blueprint for similar analyses in other sectors or future crises. This study contributed methodologically by introducing a systems engineering tool into the domain of educational policy analysis, a field typically dominated by qualitative approaches. This innovative methodological approach allowed for a more structured and nuanced analysis of policy impacts, revealing intricate interactions that might be overlooked in traditional analyses.

While the study provided significant insights, it was limited to administrative and legal factors, excluding other potential influences such as technological, cultural, or psychological aspects. Future research could address these dimensions, offering a more comprehensive view of the factors affecting educational transformation. Additionally, extending the scope to include post-pandemic developments would provide deeper insights into the long-term implications of these transformations and the resilience of the educational system.

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